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ABSTRACT

An applied dissertation was designed to improve the performance of sixth-grade social studies students based on content-area work and teacher-made tests. Teachers used difficult, low-level, performance-based assessment methods to identify student achievement. This indicated that students possessed very limited opportunities to think beyond the knowledge and comprehension levels defined by Bloom's Taxonomy of Cognitive Skills. If teachers incorporated high-level questions in the classroom, students were less likely to identify the vocabulary used in the questions. Thus, students and teachers were less likely to identify the nature of critical thinking and Bloom's Taxonomy. Direct-instruction sheets were developed for students to identify low-level knowledge, which they could apply to high-level activities. Philosophy was incorporated into the sixth-grade world history curriculum, providing the foundation for critical thinking. Application of vocabulary and low-level activities allowed students to think beyond the knowledge and a social science environment. Sixth-grade teachers also identified the nature of critical thinking, which they infused into their classrooms. Analysis of the results indicated that the direct-instruction sheets positively influenced student performance. The most successful strategies incorporated simple and complex questions in teaching Bloom's Taxonomy to students. These methods improved student ability to identify critical-thinking vocabulary, which allowed them to engage in high-level questions and activities. Findings showed that teachers need more incentives to decrease the number of low-level activities. Fourteen appendices include items such as the following: Pre-Implementation Teacher Survey; Instruction Sheets; Critical-Thinking Pre-Tests and Post-Tests; Pre-Surveys and Post-Surveys; Pre-Observation and Post-Observation Instrument; Rubrics; and Student Journal Responses. (Contains 70 references and 2 tables.) (Author/BT)

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ED 469 402

Improving the Performance of Sixth-Grade Social Studies Students Through Exposure to Philosophy

by
Chris Stabile
Cluster 97

An Applied Dissertation
Presented to the Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

SO 034 143

Nova Southeastern University
2001

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Abstract

Improving the Performance of Sixth-Grade Social Studies Students Through Exposure to Philosophy. Stabile, Chris, 2001: Applied Dissertation, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Bloom's Taxonomy of Cognitive Skills/Direct Instruction/Philosophy/Critical-Thinking Skills/Social Studies

This applied dissertation was designed to improve the performance of sixth-grade social studies students based on content-area work and teacher-made tests. Teachers used difficult low-level, performance-based assessment methods to identify student achievement. This indicated that students possessed very limited opportunities to think beyond the knowledge and the comprehension levels defined by Bloom's Taxonomy of Cognitive Skills. Moreover, if teachers incorporated high-level questions in the classroom, students were less likely to identify the vocabulary used in the questions. Thus, students and teachers were less likely to identify the nature of critical thinking and Bloom's Taxonomy of Cognitive Skills.

The writer developed direct-instruction sheets for students to identify low-level knowledge, which they could apply to high-level activities. Philosophy was incorporated into the sixth-grade world history curriculum, providing the foundation for critical thinking. The application of vocabulary and low-level activities allowed students to think beyond the knowledge and the comprehension levels. Philosophy permitted self-correcting knowledge and a social science environment. Sixth-grade teachers also identified the nature of critical thinking, which they infused in their classrooms.

An analysis of the results indicated that the direct-instruction sheets positively influenced student performance. The most successful strategies incorporated simple and complex questions and teaching Bloom's Taxonomy of Cognitive Skills to students. These methods improved student ability to identify critical-thinking vocabulary, which allowed the students to engage in high-level questions and activities. However, teachers still need more incentives to decrease the number of low-level activities.

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Approval Page

This applied dissertation took place as described.

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Guidance Counselor
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This applied dissertation was submitted by Chris Stabile under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the Degree of Doctor of Education at Nova Southeastern University.

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1/16/02
Date of Final Approval

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Chapter I: Introduction

Description of Community

The applied dissertation setting varied from urban to suburban areas located in the southeastern United States. The community's population was 127,282, of which 30,547 were foreign-born and 37,038 spoke languages at home other than English. The median yearly income in the community was $30,359; however, 11% of the families in the community had incomes below the poverty line. The number of households was 60,481, which averaged 2.1 persons per household. According to census reports, 82% of the population graduated high school and 20% graduated college, but 11% dropped out of school. Alumni relations existed between the school and the community to create mentor programs. Local businesses provided time and money to help fund some school functions. Alumni members also volunteered to serve the student population with both academic and social skills.

Writer's Work Setting

The work setting for this applied dissertation was a middle school that housed Grades 6, 7, and 8. The middle school served a population of 1,086 students. Its mission statement held that the school and its community must collaborate to foster a collegiate atmosphere to ensure high expectations. Thus, the vision statement maintained that collaboration allowed the faculty to prepare children and their families for success in a changing society. Title I money created parental workshops to help parents learn effective ways to help their children succeed in the academic content areas.

The middle school was a controlled-choice magnet school. The magnet program was for communication and gifted education. This program attracted students from all parts of the county. Controlled choice gave parents an option to send their children to any of the four magnet schools in their particular zone. The magnet coordinator offered

tours and an open house that provided parents with an opportunity to examine the school before making a choice. The middle-school design enabled the faculty and the students to be divided into grade-level teams.

With the use of teams, students were able to identify with particular teachers, and teachers were able to infuse thematic units. The middle-school design granted each team with autonomy to handle its own problems. Teaming made the dissemination of information a more efficient task because each team elected a leader who was responsible for passing the information to team members. In addition, a guidance counselor and an administrator were assigned to a team. The teaming approach permitted teachers to identify those students who needed extra assistance and guidance. Therefore, the school offered an afterschool program that assisted with both the physical and the academic needs of students. The creation of the afterschool program was developed in alignment with the mission and the vision statements of the school.

The school housed 339 Grade 6 students, 378 Grade 7 students, and 369 Grade 8 students. The student population came from diverse backgrounds, including 534 African Americans, 385 Caucasians, 154 Hispanics, 17 Asians, 1 Native American, and 7 classified as "other." Moreover, 732 students, or 62.1%, received free or reduced-price lunch. The ethnic breakdown of the students who received free or reduced-price lunch within each group was as follows: (a) 28% Caucasians, (b) 65% African Americans, and (c) 59% Hispanics. Moreover, the student mobility rate reached 40%, which provided sufficient, but not definitive, evidence that the majority of students came from middle- to low-income families.

The faculty at the work site consisted of 1 principal, 3 administrators, 58 teachers, 3 guidance counselors, 1 media specialist, 1 technology specialist, and 2 speech pathologists. Each grade level contained two teams of teachers, and each team consisted of

four content-area teachers and one elective teacher. Of the 58 faculty members, 37 earned bachelor's degrees, 20 earned master's degrees, and 1 earned an educational specialist degree. The teacher absentee rate for the 1999-2000 school year was 5.8% of 180 school days. In addition, the school used in the project was assigned different principals and assistant principals, resulting in a 52% turnover rate of teachers. Thus, the influx of new teachers helped to shift the school's paradigm to an education manager system, which granted teachers more autonomy to advance student achievement.

As a result of the new system, the faculty created a shared decision-making leadership council that met twice a month to discuss certain school-improvement policies. The leadership council included content-area department chairs, a media specialist, the magnet chair, the principal, and team leaders. Curriculum, staff development, and county policies were the foci of the leadership council. The council received instruction from the school advisory committee. This committee met once a month to identify issues concerning student achievement and education accountability. The committee was composed of members from the community and parents and teachers, who together were accountable for suggesting methods to achieve school improvement. However, the budget and other day-to-day activities remained the role of the principal and the administration. The principal and the administration made the final decisions concerning the management of the school, striving at all times to best serve the student population and enact the mission statement.

Writer's Role

The role and responsibility of the writer was that of a teacher. The writer taught world history, geography, and American history for 5 years at the same middle school. The writer earned a gifted endorsement on his teaching certificate, which permitted him to identify the nature and the needs of gifted students. As part of the school's leadership

council, the writer was provided with the necessary audience to propose actions of change to improve student performance. In his role of Social Studies Department chairperson, the writer was responsible for the implementation of curriculum. In this position, the writer met regularly with his teachers to discuss concerns with curriculum, standards, and thematic units. Moreover, the writer met with new teachers to ensure that they functioned to their best ability to increase student performance in the social studies content area. Discussions on instruction also influenced social studies teachers to diversify their teaching methodology based on their class needs. The writer reported the content of these discussions to the principal and to the leadership council to indicate that the Social Studies Department contributed to the overall scheme of school philosophy.

The writer also served for 2 years as a team leader of the gifted team. The duties of that position included dissemination of information from the leadership council. The team worked together to create interdisciplinary units and discussed the educational needs of students. This allowed the writer to work closely with guidance counselors and the exceptional student education (ESE) specialist. Therefore, the overall role and responsibility of the writer allowed him to have the necessary contact with both teachers and students to effect change in his immediate environment. The writer achieved school improvement by implementing the central theme of this applied dissertation because the power base allowed him the freedom and the authority to create change.

Chapter II: Study of the Problem

Problem Statement

The problem to be solved in this applied dissertation was that sixth-grade social studies students at the writer's school performed below standard on content-area work and on teacher-made performance tests. This predicament indicated that insufficient knowledge of social studies hindered students from obtaining above-standard scores. Students' prior knowledge also affected achievement in the content area. Thus, the learning environment dictated the level of reinforcement that students received to increase their ability on content-area work and on teacher-made performance tests. Teachers measured student ability on performance tests that required the students to provide the answers to difficult low-level activities.

Difficult activities engaged students in low-level work. This work entailed extensive memorization of details and facts. However, the difficulty was not synonymous with the complexity of an activity because complex activities required students to apply, analyze, synthesize, or evaluate information to make the information more meaningful. Furthermore, teachers increased the difficulty of an activity by using high-order thinking terminology that was unfamiliar to students. Therefore, students who engaged in both difficult content-area work and difficult teacher-made performance tests were less likely to develop critical thinking skills that required them to manipulate textual information to provide criteria-based answers.

Problem Description

During the 1998-1999 school year, sixth-grade students were taking critical thinking as a separate class. Students had limited opportunities to think critically about topics because the class provided them with activities only at the knowledge and comprehension levels. The faculty used the class as a means to provide low-level

homework, as well as other low-level work, for students to complete. The subject did not have a set curriculum. This caused teachers to create the curriculum as the school year progressed. Thus, the likelihood of student engagement in critical thinking defined through Bloom's Taxonomy of Cognitive Skills (Bloom, 1984) was very low. This class did not increase student performance in the other content-area subjects. As a result, the administration never offered the class after 1999.

The administration faced a difficult task to design a program to engage teachers in methods to promote high-level thinking in the classroom. Grade 7 and Grade 8 teachers were expected to build upon the prior knowledge of sixth-grade students. Thus, the middle school design required that sixth-grade students engage in critical thinking, which would help prepare them to think critically on Grade 8 state-mandated test. However, many sixth-grade students possessed few opportunities to think beyond the knowledge and comprehension levels because of teachers who consistently provided difficult low-level work.

As the Social Studies Department chairperson, the writer discussed and observed what sixth-grade social studies teachers were doing in their classrooms. The majority of low-level work kept students on task. These teachers felt that their schedules hindered them, and they also felt that students needed more basic skills before they engaged in critical thinking or complex thought. Their views constituted important teacher-based problems; nonetheless, teachers complied with the school vision and state-mandated testing. Basic skills existed in content-area classrooms; but, at the writer's work site, teachers spent the majority of time in class assessing students on difficult low-level activities. However, this method negatively reinforced teacher and student engagement in critical thinking. Therefore, these teacher behaviors hindered students' prior knowledge.

Many teachers at the school limited their use of Bloom's Taxonomy Cognitive

Skills. Teachers felt overwhelmed with state-mandated testing; therefore, they engaged students with difficult knowledge- and comprehension-level activities. They did this because they felt that students could learn if they memorized and recalled information. The leadership council searched for new methods to engage these teachers in learning the nature of Bloom's Taxonomy of Cognitive Skills before they could implement it with students. Thus, sixth-grade students and teachers served as the targeted participants of this applied dissertation.

Problem Documentation

The writer gathered evidence over several months to support the existence of the problem. Discussions with teachers revealed that 60% of sixth-grade students performed below standard on content-area work and on teacher-made performance tests in social studies. Discussions with teachers supplied evidence that indicated that a problem existed. The writer used this method because these meetings were informal and nonthreatening. This approach provided a more realistic description of the situation and supplied more evidence to document the existence of the problem. This evidence was supported by school records, which showed that 206 sixth-grade students attended summer school during the 1999-2000 school year for content-area deficiencies. The evidence also supported the observed phenomena that students demonstrated difficulties when orally asked to compare and contrast, to evaluate, or to support their answers based on criteria from the text or other sources. This supported the common practice of engaging students in more difficult knowledge- and comprehension-level work. Moreover, many teachers overused the textbook for the development of questions, which increased the difficulty of the questions. This showed that current pedagogical practices hindered student knowledge of complex thinking.

Sixth-grade students demonstrated difficulties in identifying high-level terms, such

as evaluate, analyze, or justify. This observation suggested that students' prior knowledge of critical-thinking vocabulary reflected their limited exposure to instruction involving complex thought processes. Therefore, when teachers included these types of activities in their lessons, sixth-grade students were more likely to demonstrate difficulties because they did not comprehend the meaning of the question or of the task. Teachers assumed that students could identify the meaning of high-level terms, making the activities incomprehensible. As a result, questions became more difficult for students to answer; more students had difficulties performing above standard on content-area work and on teacher-made performance tests.

Causative Analysis

The writer found evidence of the problem through a preimplementation teacher survey (see Appendix A). The survey asked teachers to identify their ability to teach critical-thinking activities. The survey indicated that only 2 of 9 sixth-grade content-area teachers spent more than 25 minutes during a 55-minute class on complex activities. Therefore, the limited class time decreased the likelihood that teachers would teach critical thinking because 6 of 9 sixth-grade teachers noted that such complex activities require more time. The administration did experiment with block scheduling; however, the faculty vetoed the concept of block scheduling because of inconsistencies with instructional time.

Moreover, only 3 of 9 sixth-grade content-area teachers regularly gave students activities that required them to think beyond the knowledge and comprehension levels. This small number of teachers suggested that the teachers had decided not to incorporate critical-thinking activities. This decision to employ simple classroom instruction indicated that these teachers possibly possessed a limited knowledge of how to apply critical-thinking activities in the classroom. This notion was substantiated by the school's

attendance records for staff development. These records showed that only 22 of 58 teachers sought to improve their knowledge of Bloom's Taxonomy of Cognitive Skills through attendance at an on-site workshop. The workshop was open to the entire staff, but only 3 of 9 sixth-grade content-area teachers attended the workshop. The workshop presenter offered the class at convenient times and gave the faculty ample notice.

Inferences from the data suggested that teachers who provided only difficult low-level activities taught only the breadth, rather than the depth, of the subject. Low-level engagement required students to memorize and recall information but limited their application of key vocabulary necessary to identify the concepts of a text. Vocabulary enhances the comprehension of texts providing the foundation for cognition (Catania, 1984; Skinner, 1957, 1974, 1981, 1989). Thus, limitations in the application of vocabulary increases the probability that students would emit incorrect responses to inferential questions (Koltun & Biemiller, 1999). Critical thinking provides teachers with the ability to expand on the depth of subjects. This was needed to advance the current level of student learning. Moreover, because teachers indicated that they had a limited amount of time to teach students critical-thinking skills, students were less likely to identify critical-thinking vocabulary.

Despite the 52% turnover of new teachers to the writer's school, many teachers who accepted the traditional top-down managerial paradigm remained. These teachers perpetuated the old paradigm that governed student behaviors and the expectations of teacher performance. As a result, the writer observed that the old paradigm caused students to engage in low-level mastery of basic skills and teachers to lecture and rely on the textbook for support. These observations support Sparapani's (1998) claim that teachers were less likely to teach critical-thinking skills within the traditional paradigm of a firm top-down management system. It is the writer's belief that only when teachers

change their point of view and create learning environments that reinforce more complex thinking that student performance and morale increase. Thus, Beyer (1998) found that "among the features of such [critical thinking] learning environments, two stand out as especially crucial: (1) repeated learning in meaningful thinking beyond the level of recall and (2) encouragement to engage and remain engaged in such thinking" (p. 262).

Another cause that was attributed to low student performance on content-area activities and on teacher-made performance tests consisted of the need for basic skills. Transforming the lesson from the difficult knowledge and comprehension levels to the complex upper levels of Bloom's Taxonomy of Cognitive Skills provided inconveniences for many teachers. Knowledge-type questions serve as the foundation for critical thinking (Davis & Rimm, 1998). The ability of teachers to develop high-level questions and activities, as noted by Beyer (1998), causes more opportunities for students to engage in complex thought. Time and creativity cause teachers to rely on textbooks.

Lipman (1999) defined the nature of critical thinking as relying on criteria, self-correcting, and sensitive to context. This definition implies that critical thinking transcends just recalling facts and moves toward providing reasons for how a question is answered. Teacher repertoires contained a limited use of critical-thinking questions. As Sparapani (1998) suggested, teachers who are less likely to incorporate Bloom's Taxonomy of Cognitive Skills in the classroom create problems for students to identify high-level questions. This maintains Gallagher's (1998) claim that students need to support their answers from textual information through lists of questions and graphic organizers. However, students receive very limited exposure to these activities because of the teachers' limited knowledge of Bloom's Taxonomy of Cognitive Skills.

Supon and Wolf (1993) contended that teachers who expressed unfamiliarity with the verbs of Bloom's Taxonomy of Cognitive Skills were more likely to engage students

at the knowledge and comprehension levels. This information supports the evidence that only 22 of 58 teachers at the writer's school sought to improve their knowledge of Bloom's Taxonomy of Cognitive Skills, which indicated that only a few teachers acquired the necessary information concerning the implementation of Bloom's Taxonomy of Cognitive Skills in the classroom. The literature about the nature of implementing critical thinking is extensive.

Relationship of the Problem to the Literature

The literature showed that students receive little exposure to complex thinking due to limitations in (a) prior knowledge and vocabulary knowledge, (b) textual experiences, (c) student motivation, and (d) teacher willingness. The review of the literature began with a systemic view of the problem. Schools develop as a consequence of their social environment. According to Banathy (1992), "the community and the larger society constitute the functional environment that not only surrounds the educational activity system, but also creates it and in turn is affected by its creation" (p. 37). Reigeluth (1994) pointed out that the role of the family changes based on the new economic structure of a service-based economy; therefore, more students come from homes with divorce and dual-income parents. As a result, Reigeluth suggested, students come to school from homes where very little communication, structure, and caring exist. Vail (as cited in Davis & Rimm, 1998) also found that personal, home, and school factors, such as hunger, fatigue, and too much television viewing, hindered critical thinking. Reigeluth further pointed out that the rote memorization of the industrial-age paradigm is obsolete. However, teachers are more likely to teach basic skills because the process of change is slow (Sparapani, 1998). Thus, data can positively influence teachers to change their views toward critical thinking.

The ability for the environment to influence human behavior indicates that new

information changes individual points of view, thus impacting the entire system. Kuhn (1970) stated, "As a result [from the data], scientists with different paradigms engage in different concrete laboratory manipulations" (p. 126). In comparison, Fullan (1999) noted that schools are "data-driven by choice" (p. 47). Faculty members can alter their paradigm when they learn about the problems in their current reality. Teachers and administrators are more likely to read research and engage in performance evaluations because, according to Tewel (1997), "teachers and administrators alike have developed a thirst for data they can use to affirm, modify, or reject new approaches" (p. 152). Data can change the point of view of teachers and administrators concerning the purpose of education, which demands students to solve problems and work cooperatively (Reigeluth, 1994).

As a result, teachers must provide students with the necessary experiences to create an atmosphere to promote critical thinking, despite the hardships students endure. Teachers must deliver relevant work to students for them to identify its meaning. As Dewey (1991) suggested, the environment provides students with experiences, and the thinking process adapts to the new environment and solves real-life problems. Both Dewey and Glickman (1993) suggested that teachers need to make the material relevant by connecting the new material to real-life situations, making the content meaningful to students. This connection provides meaning for students that is less likely to exist in the traditional industrial-age paradigm. The writer suggests that teachers can provide students with the necessary experiences to enable them to select and to emit talk of critical thinking. Skinner (1972) observed that students bring something with them to the learning environment; but the teacher, through positive reinforcement, will be able to change the verbal behavior of the students. Therefore, teachers must incorporate methods to provoke students to learn high-level vocabulary, enabling them to identify high-level questions.

Savage (1998) held that high-level questions elicit a higher cognitive process. This

process, in turn, correlates to increases in student performance. Moreover, according to Savage, "research has shown that the greatest majority of a teacher's instructional time is spent asking questions" (p. 291). As a result, teachers must practice the art of questioning (Gilbert, 1992). Teachers must also practice the correct combination of questions and wait time to elicit critical-thinking responses. The ability of teachers to incorporate questioning techniques requires them to change their traditional approaches because the student population changes over time. Thus, to best serve the student population, teachers must learn to modify their behaviors to promote critical thinking and student achievement. In addition, teachers must ask high-level questions because 80% to 85% of what students retain is through those types of questions (Savage). Consequently, teaching critical thinking provides students with the opportunity to relate to and to solve real-life issues and problems.

In conjunction with Savage, Beyer (1998) maintained that it was essential to "organize lessons, units, or topics around such questions to provide students continued opportunities to engage in all kinds of thinking to generate worthwhile and meaningful subject matter learning" (p. 263). Nevertheless, Delquadri, Greenwood, Whorton, Carta, and Hall (as cited in Mathes, Fuchs, Fuchs, Henley, & Sanders, 1994) found that low-performing fourth-grade students received very minimal reading practice over a 2-week period. This finding suggests that in traditional classrooms, teachers spend more time on factors other than preparing students to identify critical-thinking vocabulary and instructing them in the nature of critical thinking. This notion supports Sparapani's (1998) concern that if teachers were unfamiliar with critical-thinking strategies, then their students became even more unlikely to identify critical-thinking questions. Pedagogical techniques must focus student learning on critical thinking, ultimately preparing students to learn the skills necessary to solve a variety of problems after their school careers.

However, in the traditional industrial-age paradigm, the low demand for teaching critical-thinking skills expresses the economic needs of society (Reigeluth, 1994). Teachers possibly hinder student prior knowledge, which can decrease their ability to perform complex thinking.

When teachers introduce a text, students' prior knowledge of the topic influences the ability of the students to answer and comprehend the text (Stetson & Williams, 1992). Students must be able to engage their prior knowledge, however limited, to identify critical-thinking skills. Moreover, Woloshyn, Paivio, and Pressley (1994) observed that students must use prior knowledge to gain new knowledge. Woloshyn et al. also showed that incorrect prior knowledge can affect student acquisition of new knowledge. Teachers must promote student prior knowledge, which includes the foundation of key vocabulary (Vaddhanayana, 1998). The identification of vocabulary provides the groundwork for students to improve their prior knowledge. Students' prior knowledge is then applied to the newly acquired knowledge. Werner and Kaplan (as cited in Robbins & Ehri, 1994) noted that students develop vocabulary from explicit or direct reference of objects and through incidental encounters with words in verbal contexts. Thus, it is the writer's belief that teacher behaviors must provide students with opportunities to increase their exposure to critical thinking.

Social issues cause students to limit their ability to identify critical thinking (Vail, 1990). Therefore, teachers need to rely on strategies and new knowledge to change their behaviors to meet the needs of their new student population. Wilson (1995) suggested that public knowledge provides the meaning of the information. To create a critical-thinking environment, complex activities are used to increase the frequency of students engaging in high-level cognitive processes. Increases in the vocabulary knowledge of students also increases student ability to identify words used in the context of a text.

Robbins and Ehri (1994) found that students with larger vocabularies could identify words based on the context of the text, and students who possessed smaller vocabularies could not. Hence, the writer argues that teachers who increase student ability to identify critical-thinking terms reinforce student vocabulary knowledge.

Parmer, Thames, and Kazelskis (1997) implied that expository texts only provide limited experiences to create meaning for students. Textual information consists of abstract and irrelevant knowledge. Moreover, Parmer et al. observed that "poor readers have not had the experiences which equip them with the necessary background knowledge of content-area information and/or word knowledge (i. e. terminology) necessary to adequately supply meaning to expository texts" (p. 15). As Brooks, Hamann, and Vetter (1997) contended, poor reading environments do not reinforce student learning processes. As a result, students are more likely to engage in the memorization of information for recall purposes measured on outcome-based activities. However, engaging students in critical thinking provides them with methods to apply the knowledge to various fictional or real-life situations. The writer believes that if students come to class without the necessary experiences, then teachers must change their behavior to create an environment of critical thinking. Therefore, the interaction of teachers, peers, and texts provides an environment of critical thinking only if teachers reinforce student behaviors to emit talk of the necessary critical-thinking vocabulary. This supports Dewey's (1991) position that teachers must incorporate real-life experiences in order for students to relate old knowledge with new knowledge.

Student motivation also affects the ability of students to identify critical-thinking skills. Gentile and McMillan (1990) asserted that at-risk students are identified as students who cannot critically think and who do not have positive earlier learning experiences. These students do not receive positive reinforcement to function within a

regular classroom. These students become labeled as unable to think critically; therefore, they only experience low-level activities. According to Gentile and MacMillan, research demonstrated that "by creating a positive climate in the classroom, challenging students, and providing tangible rewards and strong verbal reinforcement, teachers can maximize opportunities for at-risk learners to become more experienced" (p. 383). The writer affirms that this method of instruction can work for all students. However, teacher behaviors must change to incorporate and view all students as able to think critically. Grossnickle and Thiel (as cited in Ray, 1992) suggested that teachers must be positive and accept students as persons. Thus, once teachers can identify that they control the learning environment, critical thinking can allow students to become problem solvers, preparing them for the changing society. However, obstacles exist that cause teachers to be less likely to incorporate critical thinking in the classroom.

Sparapani (1998) argued that the following constraints hinder critical thinking: (a) the schedule, (b) student attitudes, (c) teacher attitudes, (d) resources, (e) atmosphere, and (f) assessment. These hindrances allow classroom environments to inadequately prepare students for the changing society, which requires them to manipulate information and solve problems (Reigeluth, 1994). Teacher attitudes dictate how teachers view critical-thinking attitudes, usually falling within the traditional paradigm. Students who receive assessment through performance-based tests do not need to think beyond the comprehension level because the nature of the test measures learning based on recalling information. It is the writer's observation that copyrighted tests sparsely engage students in critical thinking. Teachers need methods to change their points of view concerning the nature of critical thinking, which, in turn, changes their behaviors to best serve the new student population.

The null hypothesis developed from the literature indicates that teaching students

critical-thinking vocabulary in social studies content-area courses will have no effect on student performance. The writer asked a question which concerns the groundwork for the solution strategies to increase student performance: Can teaching students complex philosophical knowledge through direct instruction positively influence student critical-thinking skills? Therefore, this applied dissertation contains three sets of independent and dependent variables: (a) teaching Bloom's Taxonomy of Cognitive Skills vocabulary and the change in student critical-thinking vocabulary, (b) teaching philosophy through direct instruction and the change in student performance, and (c) exposing teachers to critical-thinking knowledge and the changes in teacher behavior. ...

Chapter III: Anticipated Outcomes and Evaluation Instruments

Goal

Sixth-grade social studies students will perform above standard on content-area work and on teacher-made performance tests.

Expected Outcomes

The following outcomes were projected for this applied dissertation:

1. Twenty of the 39 targeted sixth-grade social studies students will increase their content-area knowledge of social studies by scoring 75% or greater on teacher-made tests and on content-area work.

2. Twenty of the 39 targeted sixth-grade social studies students will demonstrate an increase in their knowledge of complex thinking measured by a presurvey and a postsurvey.

3. Twenty of the 39 targeted sixth-grade social studies students will demonstrate an increase in their verbal knowledge of Bloom's Taxonomy of Cognitive Skills vocabulary measured by a pretest and a posttest.

4. Five of the 9 sixth-grade content-area teachers will demonstrate an increase in their knowledge of critical thinking as measured by a pretest and a posttest.

5. Five of the 9 sixth-grade content-area teachers will increase their frequency of use of complex activities defined through Bloom's Taxonomy of Cognitive Skills as measured by a preobservation and a postobservation.

6. Five of the 9 sixth-grade content-area teachers will demonstrate an increase in their ability to incorporate critical thinking in the classroom as measured by a presurvey and a postsurvey.

Measurement of Outcomes

Outcome 1 involved the content-area knowledge of students and their ability to

apply historical and philosophical knowledge. Written tests were given after every section of the treatment to indicate an increase of content knowledge after exposure to the solution strategy. These tests included both closed- and open-ended questions through which the writer assessed student ability to answer short-response questions. Questions included the vocabulary of Bloom's Taxonomy of Cognitive Skills. These 55-minute tests were used only as a posttest because the testing of content material increases the content validity of the tests. Test items must emphasize validity, which dictated that these tests be based on standards that students learned. Pretesting student knowledge on content-area information would jeopardize construct validity. The results were correlated.

Outcome 2 reflected student abilities to identify key words. This presurvey and postsurvey allowed students to demonstrate their ability to identify the words of critical thinking. This survey required 25 minutes to complete, and it contained closed-answer questions. This instrument measured the changes in student knowledge responses of critical thinking through a Likert scale. The writer used the differences between the scores to identify success of the outcome. The survey asked students to rate their knowledge of critical thinking by responding to 13 questions. The surveys were valid and reliable.

Outcome 3 encompassed the verbal knowledge of students. The pretest and posttest design indicated the progress of students. The test was based on a cloze design to identify the correct word with the definition and the differences between low- and high-level questions. Moreover, a correlation was performed to indicate the impact of the solution strategies. The content validity of the test indicated that the test measured the objectives of the applied dissertation. Its face validity ensured that the questions of the test asked students about the critical-thinking vocabulary of Bloom's Taxonomy of Cognitive Skills and the nature of questions.

Outcome 4 was demonstrated through a pretest and a posttest of teachers'

critical-thinking knowledge. The pretest was administered at the first inservice workshop to collect data. These data provided the writer the current knowledge base of the teachers, which allowed the writer to adjust the focus of instruction. The posttest was administered at the last workshop to indicate teacher acquisition of the new material. Differences in the mean scores reflected the change in teacher knowledge.

Outcome 5 identified the frequency of teacher use of high-level activities. The preobservation and postobservation demonstrated the ability of teacher knowledge of critical thinking. The observation was not nonparticipatory because the teachers knew that the writer was observing. The observation measured the frequency of use of low- and high-level activities. Therefore, an indication of increase or decrease in the frequencies of low- and high-level activities indicated progress. The observation instrument included both observed critical-thinking behaviors and noncritical-thinking behaviors for two 55-minute class periods. Moreover, reliability was measured through observer consistency. The instrument was determined to be reliable because similar behaviors were observed over a period of time.

Outcome 6 demonstrated the ability of content-area teachers to incorporate complex thought processes as defined through Bloom's Taxonomy of Cognitive Skills. The pretest and posttest survey design allowed the writer to establish the current ability levels of teachers. This relationship determined the success or failure of this objective. Moreover, the survey contained a Likert scale that permitted teachers to rate their level of ability. This survey took 20 minutes to complete.

The teacher critical thinking test and the teacher survey both contained validity and reliability. The content validity ensured that the nature of the questions were concerned with critical-thinking skills in the classroom. The test-retest method provided reliability of the survey because the writer administered the survey to a group of teachers

selected from convenience to answer the questions. The same survey was administered again to the same group of teachers, after a 3-week period, who answered the questions differently from the first attempt. The correlation between the testing produced a reliability index of .70. The same methods were used to find reliability in teacher-made tests. As a result from the reliability index of .70, modifications were made to some of the questions, which ensured that more accurate responses were given by the targeted participant teachers.

The validity and reliability of teacher-made tests ensured a more believable indication of participant behavior. Ravid (1994) noted that teacher-made tests can produce more unreliable results than commercial tests. A test-retest analysis was performed, despite the notion that teacher-made tests produce less reliable results. The survey and tests were administered to a group of sixth-grade students (selected from convenience) before implementation. The same survey and tests were administered after a 2-week period to the same group of students, and the participant answers were very close to the first survey. The correlation between testing produced a reliability index of .80. The test-retest analysis cannot produce a conclusive assessment of reliability (Ravid); however, any test of reliability is better than no test of reliability. Validity ensures that each question on the different instruments measured the content covered in the solution strategies. The face and construct validity were indicated by the consistencies between the solutions and the questions. The research design and the sampling methods governed the implementation of this applied dissertation.

The design of the project incorporated a single-group pretest and posttest. Gall, Borg, and Gall (1996) noted that this design is "justified when extraneous factors can be estimated with a high degree of certainty, or can safely be assumed to be minimal or nonexistent" (p. 493). Gall et al. noted that this design is best used when a researcher tries

to change a very stable behavior. The writer used this design despite its limitations because the solution strategies were unusual at his work site. This method also was chosen because of convenience and the limitations in student and teacher population. A quasi-experimental design is an improvement over the single-group pretest and posttest design; however, the unique nature of the solution strategy itself can minimize some extraneous factors. The writer's work site provided limitations in complex thinking, such as Bloom's Taxonomy of Cognitive Skills vocabulary, direct instruction, and philosophy as described in the solution strategies, which suggested minimal threats to internal validity. The writer also used students with diverse backgrounds to represent the total school population.

Popham (1993) stated, "Educational evaluators must function in a decisively practical real-world arena" (pp. 247-248). Thus, researchers must use samples that represent the population they serve. Quota sampling methods provide researchers with a representative population (Popham; Robson, 1997). Quota sampling creates a target group which is similar to the population group. Popham noted that "quota sampling calls for the assignment of quotas, that is, proportions of types of people in the sample" (p. 248). The applied dissertation utilizes quota sampling. The population group equals the sum total of two sixth-grade teams of students. Thirty-five students served as the targeted group for the treatment, which equals one class size. During the course of implementation, four students withdrew from the project: three male students relocated to other schools, and one female student became disinterested. The female student did not state the reasons why she felt disinterested, but the writer respected her decision to withdraw. Nevertheless, 35 students still provided an adequate representative sample size. This sample size of students provided a good effect size of the results, which provided more reliability.

The characteristics of the targeted students represented the population group. For example, the ability level of the students ranged from gifted to exceptional, which ensured that a wider range of students received exposure to the treatment. The gender of students reflected an almost even mixture of 16 girls and 19 boys. Moreover, the racial mixture also reflected the population group of the school. There were 14 African Americans, 13 Caucasians, 7 Hispanics, and 1 classified as "other." Therefore, this type of sample produced a more representative population, which reflected real-world conditions.

Chapter IV: Solution Strategies

Discussion and Evaluation of Solutions

Solution strategies tried to solve the problem that sixth-grade social studies students performed below standard on content-area work and on teacher-made performance tests. This problem indicated that the student environment provided limited experiences for eliciting high-order thinking skills. The skills that required students to analyze, synthesize, and evaluate knowledge were inconsistent. However, the traditional paradigm at the writer's school influenced the teachers' points of view. Thus, teachers were less likely to engage students in complex thinking because of hindrances with time, textbooks, and attitudes. The literature suggested several solution strategies to increase the opportunities for teachers to provide students with critical-thinking activities, such as direct instruction, cooperative learning, peer interaction, and vocabulary development. The solution strategies were designed to increase both student and teacher knowledge of critical thinking.

It is the writer's belief that prior knowledge increases through the incorporation of graphic organizers of key vocabulary. Berg, Cressman, and Pfanz (1998) found that if students discussed vocabulary, webbed vocabulary words in a graphic organizer, looked up words in a dictionary, and were read to by teachers, then their knowledge of vocabulary increased. Therefore, teachers need to know how to incorporate graphic organizers in the classroom. In addition, Ellis (1994) asserted that teachers can directly teach information from the graphic organizer to increase student identification of the information. Direct instruction establishes the knowledge for students to apply, and it also allows teachers to manipulate student verbal knowledge. Direct instruction creates a learning environment in which students can identify and apply low-level knowledge to high-level activities.

According to Agnello, Jockl, Pearson, and Velasco (1998), graphic organizers help students identify spatial arrangements and the organization of concepts. This supports the position of Berg et al. (1998) because students can visualize the knowledge from the text in certain configurations to create meaning. Furthermore, direct instruction provides the foundation of basic knowledge, which then can be applied to critical-thinking activities created through Bloom's Taxonomy of Cognitive Skills. Once direct instruction creates the foundation of knowledge in the classroom, teachers must engage in cooperative learning.

Cooperative learning positively affects comprehension of the material. Meloth and Deering (1992) and Brown and Palincsar (as cited in Meloth & Deering) both observed that cooperative learning attributes to the comprehension of subject matter. Cooperative learning provides the opportunity for students to identify issues and to engage in discussions. It also provides the necessary means for students to apply the knowledge which they gained through direct instruction. Wedman, Kuhlman, and Sammye (1996) support this position because they found that cooperative learning helps enable students to become experts on particular topics, which, in turn, enables them to teach others. Goldenberg (1993) noted that teaching groups through direct methods can influence student conversations. Thus, the verbal behavior (both oral and written) of students allows them to engage in an environment that establishes high-level activities, increasing the opportunity for critical thinking. For example, cooperative learning provides content-area teachers with a strategy that helps students to analyze historical themes (Goldenberg), supporting Gustafson's (1998) position of student analysis of historical texts. Discussions of historical texts allow the texts to become relevant; and teachers can incorporate real-life applications, providing students with prior experiences to increase their identification of issues (Dewey, 1991). In addition, peer tutoring

increases the relevance of the material and helps students gain the necessary experiences, enabling them to identify comprehension strategies.

Brooks et al. (1997) noted that teachers must create a positive learning environment to increase reading behaviors. Therefore, teachers who develop a critical-thinking environment also increase the opportunities for students to read and disseminate knowledge. A direct-instructional paradigm provides teachers with a method to stimulate students and to create a foundation for the application of the acquired knowledge. Peer tutoring that incorporates partner reading, paragraph shrinking, prompt cards, and prediction summaries increases student reading strategies (Mathes et al., 1994). Direct instruction helps students to gain the basic knowledge before they will be able to apply that knowledge to high-level activities. Moreover, Geimer, Kryzstofczyk, Luczak, and Talach (1998) enhanced metacognitive skills through brainstorming, setting a purpose, prior knowledge, paraphrasing, asking questions, rereading, and taking notes with graphic organizers. These methods enhance direct instruction, permitting the teacher to engage students in basic vocabulary of the content. It is the writer's argument that the basic vocabulary of critical thinking, as defined by Bloom's Taxonomy of Cognitive Skills, content-area vocabulary, or general vocabulary, provides students with the foundation and the ability to function at a higher cognitive level. In addition, peer interaction requires students to be grouped.

Grouping of students does require a heterogeneous group and could contain several homogeneous groups, which teachers could split up to create peer tutors (Ediger, 1998). In an older study, Azrin and Lindsley (1956) found that operant conditioning practices can reinforce the contingencies of cooperative learning. Direct instruction increases the opportunities for student familiarity with basic knowledge before students move into complex thinking. Thus, the presence of teachers is needed to reinforce

cooperative learning behaviors; nevertheless, Sarbin (as cited in Carli, 1996) reported that student tutors are better able to identify than teachers can if other students can understand the material.

Furthermore, Falagrady (1994) suggested incorporating prereading activities, such as identifying pictures in texts, explaining bold titles, relating prior knowledge, and predicting what will be read. Piper (1992) agreed that the postreading or outlining; sentence summaries; know, want to know, and have learned (KWL); and self-interrogate increase student metacognitive skills. In addition, teachers need to model critical-thinking practices. Thus, teachers need to teach students to compare, to evaluate, and to classify to increase the opportunity for critical thinking (Davis & Rimm, 1998). Metacognitive terms become part of the student vocabulary; and when teachers ask students to evaluate a term at a future date, students are more likely to emit the appropriate word. Students must be able to identify words and their function within a social context (Vygotsky, 1989).

The limitations of this particular applied dissertation suggest that the intervention might be too advanced for students with limited reading skills; however, Defoe (1999) found low-achieving students who were paired with advanced students improved their comprehension. Therefore, at the work site of the writer, students who were identified as low achievers could benefit from a direct-instructional approach, which approach includes metacognitive methods to first improve the basic vocabulary knowledge of the students before moving to critical thinking. To create more opportunities for students to think above the knowledge and comprehension levels, the writer must demonstrate these strategies to other teachers.

Critical thinking is gathering information from the text and providing support for answers. It is the writer's belief that vocabulary knowledge is the prerequisite for critical

thinking and that direct instruction reinforces students' knowledge of vocabulary. Thus, students must build upon familiar concepts around a procedure, such as lists of questions and graphic organizers (Beyer, 1998), to model their thinking, allowing them to apply what they learned from the text. Limitations in student vocabulary hinder students from identifying key concepts and inferential questions (Koltun & Biemiller, 1999). Hence, the need for direct instruction to teach vocabulary is necessary to increase the opportunities for engaging students in critical-thinking activities. Critical thinking is based on criteria and permits students to use the criteria in fictional or real-life situations (Lipman, 1999). Criteria-based knowledge can be used to discuss concepts, such as fairness (Lipman). Falagrady (1994) and Piper (1992) both support this modern concept of critical thinking because it influences instruction and curriculum to increase student achievement.

Description of Selected Solutions

Bloom's Taxonomy of Cognitive Skills created the paradigm in which the solution strategies occur. To begin, an analysis of Bloom's Taxonomy Cognitive Skills revealed that its design allows teachers to create critical-thinking activities based on fundamental knowledge elicited from the knowledge and comprehension levels. Bloom's Taxonomy Cognitive Skills functioned as a framework to develop questions and provided the foundation for discussion. According to Gilbert (1992), the taxonomy conceptualizes, organizes, and communicates the content material to students. Thus, the writer argues that the taxonomy functions as a programmed instruction device that allows students to interact with the learning environment. Knowledge is manipulated through questions and activities designed through the hierarchy of the taxonomy. The hierarchical design provides students with the necessary experiences to acquire knowledge to solve problems. Farley and Elmore (1992) suggested that application and synthesis questions provide experiences for students to use new words to adapt word acquisition skills to

gather meaning from content-area texts. The writer further believes that the hierarchical design allows teachers to first engage students in basic content knowledge and then use that knowledge as the basis for critical thinking.

Teachers implement Bloom's Taxonomy of Cognitive Skills for creating questions, but students also should be taught to create questions. Blank-Libra (1997) and Hettich (1993) created Bloom's Taxonomy of Cognitive Skills handouts. These handouts contain the verbs necessary for creating high-level questions. Supon and Wolf (1993) noted that teachers and students need a handout because they might be unfamiliar with the verbs of the taxonomy and could create high-level questions. Student-generated questions permit students to become active participants in the learning process, which provides them with meaning and relevant experiences for critical thinking. The Bloom's Taxonomy of Cognitive Skills handout was the foundation for discussion (Williams, 1997). Discussions allow students to engage in socially created knowledge and caused students to interact with peers and answer questions that individually they might be unable to do (Williams). Discussions also permit students to justify their answers, which answers support Lipman's (1999) concept of critical thinking. The writer argues that the incorporation of philosophy in the curriculum increases the use of Bloom's Taxonomy of Cognitive Skills, granting students more opportunities to engage in critical-thinking activities.

Philosophy is thinking (Beyer, 1990). Philosophy allows students to think about real-life or fictional issues, thus providing students with a context for engaging in complex thinking. For example, philosophy incorporated into the world history curriculum transformed social studies into social science, which supports Presseisen's (as cited in Milton, 1993) postulate that critical thinking is better taught in the content areas. As a result, this classroom environment permits students to examine issues and to provide evidence for their claims about historical issues.

Moreover, Lipman (1994) noted that students who engage in questions such as "What is reality?" should suffice for critical thinking. However, Fox (1998) suggested students could study traditional philosophy because of its long line of literature. Traditional philosophy creates historical relevance to the time periods that students study; therefore, by studying the Russian Revolution, the students identify the concepts of Marxism. Traditional philosophical texts, however, need to be transposed to the readability level of sixth-grade students. The Fry (1977) readability formula translated the text into sixth-grade readability. It indicated that the average number of syllables per 100 words was 122, and the average number of sentences per 100 words was 5.9 for the majority of sixth-grade students. Philosophy also promoted a community of inquiry in the classroom (Lipman, 1994, 1999).

To teach philosophy is to promote scenarios for students to solve. Nevertheless, it is the writer's view that before students can identify these scenarios they must identify the criteria of words, such as evaluate and analyze. This supports Kennedy's (1996) position which suggested that students must analyze the criteria for words, such as right, wrong, human, fair, good, bad, and justice. Thus, the verbal learning community, contrived of objects within the classroom (Skinner, 1957), such as texts and Bloom's Taxonomy of Cognitive Skills vocabulary, govern what students most likely talk about during class. It is then the writer's belief that philosophy studied in the classroom supplements the use of Bloom's Taxonomy of Cognitive Skills because creating a handout of action verbs can increase the opportunity to expose students to a critical-thinking environment, which increases critical-thinking skills.

Programmed instruction was the solution foundation for implementing critical thinking both in the classroom and in a teacher inservice workshop. Skinner (1989) postulated, "not everything we want to teach can be programmed" (p. 101). However,

vocabulary development was one aspect that used a programmed design. Programmed instruction offers students with variations to identify key vocabulary and to apply what they learn into a creative high-level project. Berg et al. (1998) found that direct instruction (which is associated with programmed instruction) caused students to progress; and, after their programmed instruction (such as the use of flashcards), students were able to create projects and to engage in vocabulary games. This method provides the foundation for creativity because, before students could move to create games or to engage in critical-thinking activities, they must know the material. Therefore, Bloom's Taxonomy of Cognitive Skills functions as a method to program students to identify critical thinking; and the hierarchical structure of its questions allow students to manipulate content-area material. Each level of questions changes student behaviors because each level asks students to perform a different task.

The solution strategy was necessary at the writer's work site. Students possessed few opportunities for thinking beyond the knowledge and comprehension levels. Instruction-infused methods to enhance vocabulary provided the foundation for critical thinking. A pragmatic solution was needed to alleviate the problem of teaching basic skills while not engaging students in critical thinking. Despite the overall need for low-level students to increase critical-thinking skills, the projected limitation of the research would be to misuse the research to generalize about all students. This is possible because students who have extreme difficulty in decoding words (Shankweiler et al., 1999) need other types of assistance with reading acquisition skills. The decision to incorporate programmed instruction and philosophy in the sixth-grade curriculum was to provide students with the necessary experiences which Grade 7 and Grade 8 teachers may require for mastery of that curriculum. Moreover, the success of middle school improvement begins with sixth-grade teachers; therefore, those teachers were targeted for

learning how to incorporate these critical-thinking activities.

Rasinski (1990) found that direct instruction can determine reading performance. For example, graphic organizers (see Appendix B) functioned as programmed instruction because students received direct knowledge from interacting with the organizer and must apply the information to questions or a project. The exposure from the direct instruction helps students read the text and allowed peer tutors to assist with the reading of texts. In addition, Simpson (1996) noted that mnemonic techniques help vocabulary development. Simpson stated that writing the words on cards and creating pictures of words increased the ability of students to identify vocabulary words and their meaning. Ediger (1999) supported these techniques because he suggested using picture clues for students to gather information for content reading. Thinking aloud also affected student comprehension of content-area material (Kucan & Beck, 1997). Simple questions such as "What is this about?" promoted critical thinking (Kucan & Beck). This method supports the hierarchical design of infusing critical thinking in the classroom. Basic knowledge must be mastered through programmed instruction before students move to complex thinking.

In the project, the writer observed that philosophy promoted discussion and peer interaction because students defended their answers. Students discussed what their fellow students believe. Students gained experiences to identify critical thinking and then were able to identify what high-level questions asked them to do. Students were able to identify the word evaluation before they asked a high-level question. Thus, programmed instruction permitted students to learn both content-area vocabulary and critical-thinking vocabulary. Programmed instruction also created a foundation for students to engage in discussion and in answering high-level questions. Philosophy and programmed instruction incorporated social science into a world history class. Students did not just learn names, dates, and events, but tried to give possible answers for why events happened based on

the text and the supplemental material. Positive reinforcement was necessary for students to accept new information and provided the proper learning environment that promoted critical thinking (Ferster & Skinner, 1957). Integrating philosophy and programmed instruction, allowed for the creation of philosophical direct-instruction sheets, which sheets manipulated students to identify key vocabulary and to read a translated text before they engaged in complex thinking. Based on this integration, the writer created Stone Age direct-instruction sheets (see Appendix C), Ancient Greek direct-instruction sheets (see Appendix D), and Russian Revolution direct-instruction sheets (see Appendix E) to serve as part of the solution strategy.

Philosophical direct-instruction sheets required students to silently and then orally read a portion of a text and create a summary. The philosophical texts were developed from Fry's (1977) readability formula. In addition, the direct-instruction sheets provided students the space to respond to both closed-ended (fill in the blank) vocabulary questions and open-ended (short-response) questions for the application of the vocabulary. The creation of philosophical direct-instruction sheets provided students with a purpose for the lesson. As Meloth and Deering (1992) suggested, "students may not increase their discussions of substantive task content unless instruction and cooperative activities expressly encourage them to do so" (p. 192). Student identification of specific critical-thinking and content-area vocabulary was reinforced through the philosophical direct-instruction sheets. The reinforcement of student verbal skills was enhanced through a daily warm-up in student-kept notebooks. Philosophy through programmed instruction provided the context and method to increase student opportunities for thinking above the knowledge and comprehension levels. Sixth-grade social studies students gained the experiences needed to identify critical thinking by engaging in philosophical material.

However, teachers usually give busy work (Sparapani, 1998). This behavior resembles the traditional paradigm, which existed at the writer's school. This paradigm involved more student work at the knowledge and comprehension levels rather than at the high-thinking levels. Moreover, teachers relied too much on textbooks because of convenience, suggesting that teachers were less likely to implement high-level questions. Therefore, teachers must be able to identify methods to provide opportunities to expose their students to the analysis, synthesis, and evaluation levels. Systems thinking suggests that each part of the system will change each other. Thus, affecting teacher behaviors should, in turn, change the system of practice (Banathy, 1992). The content of the workshop allowed teachers to identify and implement supplemental material, such as (a) direct-instruction sheets, (b) metacognitive methods, (c) cooperative learning and peer interaction techniques, (d) direct-instructional methods, and (e) Bloom's Taxonomy of Cognitive Skills action verb handouts.

Report of Action Taken

The writer implemented the solution strategies. The 8-month implementation program indicated the methods that were used by the writer to increase the probability of changing the behavior of both teachers and students regarding critical thinking. During Month 1, the writer solicited the participation from the targeted teachers and the administration. Moreover, the writer investigated possible assessment tools to measure the impact of the implementation program. The writer developed his own curriculum and synchronized the solution strategy curriculum with state standards. This proved worthwhile because it allowed the philosophical curriculum to become relevant to sixth-grade social studies students. As a result, student journals revealed that 24 targeted students became aware of their own thinking process; and 30 targeted students noted the relevance of philosophy in the classroom and in real-life. Finally, the principal allowed

the writer to conduct the project without interruption; and the principal anticipated the final conclusions.

During Month 2, the goals of the writer included writing the philosophical direct-instruction sheets and developing the curriculum for the teacher-based workshops. To accomplish these goals, a tally survey identified the optimal time to conduct the workshops. The workshops existed during a 3-month implementation period with the targeted students. Permission forms were sent home with students; however, the writer did not have to contact parents because all the targeted students returned their permission forms. These forms provided the necessary ethical safeguards against harmful effects as a result of the research. However, this applied dissertation did not incorporate harmful experimental methods. It used common pedagogical techniques, along with the variables of philosophy, Bloom's Taxonomy of Cognitive Skills, and direct instruction. The only observed ethical concern was when students differed in their points of view.

On several occasions throughout the implementation, the writer observed 8 students arguing with each other concerning the definition of the concept of fairness, which proved frustrating to the students. The writer intervened to facilitate student responses to protect a democratic forum. As time progressed, one student showed other students that no definition of the concept of fairness existed. The writer reassured the students that this is a normal finding in philosophy. As a result of engaging in philosophical discussions, students developed criteria-based knowledge; and, the study of philosophy appeared to challenge their acceptable thinking patterns.

In Month 3, the writer met with his verifier to explain the procedures for implementation. This process allowed the verifier to observe the writer's progress during implementation. This month should have included conducting the first inservice workshop, in which the writer was to instruct teachers to identify the vocabulary of

philosophy and critical thinking. Despite the tally survey, five teachers could not attend the workshop during its originally scheduled date. Consequently, the writer conducted the first workshop during the next month. State-mandated testing and teacher prior commitments caused this delay.

The writer wrote the curriculum for the teacher workshops based on the goals of the applied dissertation. At the first workshop session, the targeted teachers answered pretest (see Appendix F) questions and presurvey (see Appendix G) questions to identify their knowledge of (a) direct instruction, (b) philosophy, (c) graphic organizers, (d) discussions, and (e) infusion of philosophy. Moreover, the writer gathered materials such as, but not limited to, photocopies, books, construction paper, and colored pencils. As a result of the high turnover rate at the school, the writer observed that seven teachers had 1 to 3 years of teaching experience; nevertheless, the teachers appeared receptive to the new material. The writer informed the students of the projected plans for the next 3 months. Cover letters and permission forms were passed out and explained to the students. This did not pose too much of a difficulty; however, four students took a day or more to return their permission forms. The writer removed those students who failed to turn in their permission forms by the deadline to another classroom until they did turn them in. The students received an alternative assignment related to the social studies curriculum, but they only spent a day unexposed to the treatment.

The procedures for this program were discussed with the students, including keeping a journal that contained sections for (a) warm-ups, (b) notes, (c) reactions to a problem, and (d) instruction sheets. The writer proceeded to administer a critical-thinking pretest (see Appendix H) demonstrating student present-level knowledge of critical thinking and a presurvey (see Appendix I) indicating their ability to identify critical thinking. Thirty-five students noted that they never heard of Bloom's Taxonomy of

Cognitive Skills itself or its verbs. Fifteen students noted difficulty with the identification of the presurvey and pretest critical-thinking questions. This reflected their limited exposure to any type of critical thinking taught as a subject in a content-area class. As a result, the writer explained that they must do their best and that they would not be penalized for incorrect responses. Moreover, the writer conducted the first observation of the targeted teachers. These teachers knew about the observations, but the writer told them to act naturally. The preobservation and postobservation instrument (see Appendix J) allowed the writer to indicate the frequency of observed behaviors emitted by teachers. The observation lasted only half an hour due to time constraints by the writer. The observations were performed at various times, in the morning and in the afternoon, which could have altered the observations. Nevertheless, the nonparticipant observation allowed the teachers to control the classes, helping to maintain integrity.

The implementation time with students consisted of 36 class meetings, 55 minutes each, consisting of 3 classes per week for 3 months. Before the first class meeting, the writer created a Bloom's Taxonomy of Cognitive Skills action verb direct-instruction sheet (see Appendix K) and delivered one copy to each student. At the first three class meetings, the writer reviewed the action verb list with students and allowed them to create meaningful sentences for each level of Bloom's Taxonomy of Cognitive Skills; for example, students were able to explain and apply the terms evaluate or justify. Twenty-seven students appeared to express difficulty with the term synthesis because they were never exposed to this term. The students wrote meaningful sentences that included these terms; however, the writer observed that 10 students appeared off task. When asked about their behavior, they noted that they did not fully identify the meaning of the terms. As a result, the writer paired those students with limited understanding with students who grasped the terms. This caused the students to remain on task and

promoted peer discussion about the nature of critical thinking and Bloom's Taxonomy of Cognitive Skills. Moreover, the writer informed students about the limitation of distractions that could disrupt the class. They were made aware of possible distractions, and the students noted what particular behaviors were considered distracting. Discussions about Bloom's Taxonomy of Cognitive Skills allowed 21 students to analyze the taxonomy for its hierarchical design, indicating that they were thinking about critical thinking.

The goal for Month 4 allowed the writer to introduce philosophy into the world history curriculum. The first lesson required students to engage in a warm-up activity to reflect on Bloom's Taxonomy of Cognitive Skills. Students began with a warm-up activity for each session, providing a reinforcement for the previous session. In addition to the warm-ups, students engaged in reflective responses, allowing them to answer real-life questions about philosophy. For example, students wrote about the impact of critical thinking in society, the nature of philosophy, the importance of questioning, and the nature of complex thinking. Students also responded to questions concerning the usefulness of philosophy and the other methods used by the writer. An interesting student journal response indicated that 30 students found the philosophical direct-instruction sheets helpful in learning Bloom's Taxonomy of Cognitive Skills vocabulary and philosophical concepts.

The student journal responses provided the foundation of brief discussions, allowing the writer to alter the curriculum to make it more relevant. The writer altered assignments if they appeared to be more difficult and less complex, such as the number of questions or asking students to know details. The writer developed rubrics (see Appendix L) for grading discussions and content-area work, which served as evidence of student performance. During the next nine sessions, the writer introduced the scientific method,

inductive and deductive reasoning, and archaeology within the context of the Stone Age.

Students were able to compare and contrast, through graphic organizers, both ant and human culture. This lesson provided the foundation for students to identify their own culture because the students engaged in relative work. This permitted them to identify the criteria of a culture. To reinforce this lesson, the writer infused the study of western migration of humans to North and South America, which provided the necessary controversial theories, allowing students to research, create, and defend their own theories about migration and culture. Students received direct-instruction sheets containing a small text pertaining to the Stone Age, archeology, and migration. The writer redesigned the sheets to incorporate the controversial theories.

The direct-instruction sheets allowed students to identify and to apply vocabulary, such as hypothesis, inference, and theory. These programmed instruction sheets permitted students to review the information through high-level questions. The sheets caused students to read the vocabulary and to identify the main ideas of the section, which served as the foundation for discussion. Twenty-seven students found inductive reasoning easier to learn than deductive reasoning. Inductive reasoning provided them with the opportunity to apply what they read and researched, which functioned as evidence. Thirty-five students were able to incorporate the terms of inductive reasoning, such as based on evidence, suggests, most likely as they applied to archeology and the Stone Age. Students also received a handout that contained four possible theories concerning the migration of humans. The most popular theory is the Clovis theory, which their textbook supported. After exposure to the alternative theories, 24 students noted that the book was incorrect in only noting one theory. However, several students defended the popular theory based on support from the book and their own arguments. These students realized, through complex thinking, that other points of view exist and

that questioning promoted knowledge.

Students engaged in a panel discussion that centered around the different theories. The students developed evidence for one of the four theories, and two students developed their own theories. The students presented their findings to the class for a period of a 7-minute defense of each of their theories; and, after the presentation, the students in the class engaged in questioning. The writer observed that student repertoires emitted responses of inductive reasoning, such as based on evidence and most likely. The students began to analyze other student work for faults and contradictions. Nevertheless, this provided a foundation for 32 students to engage in complex thinking. Only three students did not become as involved as the majority of students. When asked why they did not become involved, the students noted that they did not find social studies interesting; they were only compliant to receive a grade.

The writer observed that philosophical thinking involved the majority of students; but based on the unique experiences of the students, not all of them found everything interesting. Moreover, low-level activities probably would have further lessened their involvement in content-area work. For two class meetings, students engaged in warm-up activities that reviewed the key concepts of inductive and deductive reasoning. Students used their graphic-organized notes as the base knowledge to perform high-order thinking on a content-area posttest (see Appendix M) designed through Bloom's Taxonomy of Cognitive Skills, which assessed student knowledge of both critical-thinking and textual information.

The next twelve class meetings with students included introducing them to peer tutoring and cooperative learning procedures. Ancient Greece served as the context for the implementation of traditional philosophy. Students identified key vocabulary concerning Ancient Greece and applied the vocabulary after they orally read textual information. The

textbook served as a basis for identifying the main concepts of Ancient Greece. The book contained only two paragraphs on philosophy, which the writer used as a bridge to incorporate philosophy into the classroom. Seven students never heard of philosophy; 16 students knew what philosophy entailed; 12 students at least heard of the word. The writer began with a direct-instruction sheet that contained basic Greek philosophical concepts, such as good, bad, justice, fairness, beauty, reality, idealism, empiricism, logic, metaphysics, Plato, Socrates, and Aristotle. The students (a) discussed and defined the words, (b) read the questions, (c) read the main section, and (d) completed the high-level activities. The complex activities provided the foundation for discussion and class work. Thirty students performed well with creating their own syllogism and identifying fallacies through advertisements. Students identified this aspect of deductive reasoning, but they preferred the inductive reasoning because it relied on evidence which allowed history to turn into social science.

As the discussion continued, the writer noted student interest in ethical problems. The original plan did not expose students to ethics; however, the writer observed that ethics served as a means to further engage students in philosophical thinking. The writer added ethics to the Greek philosophical direct-instruction sheets. Students reviewed the vocabulary through a warm-up activity. Ethical reasoning allowed students to identify problems in modern society, such as stealing and capital punishment.

The ethical direct-instruction sheets permitted students to identify the concepts of utilitarianism and the greater good. These sheets allowed students to interact; however, the writer needed to help the students because of the unfamiliarity of these concepts. Twenty-seven students noted that a person should not be put to death because that person might be innocent. Students also took notes through graphic organizers permitting them to further identify the concepts of ethical reasoning. Philosophy allowed students to

correct their own knowledge because the writer observed that students challenged what others stated. The writer informed students that they did not need to concern themselves with the right or wrong answer but only with how they answered the problem. For example, students discussed the seat belt and helmet laws. Twenty-two students believed that these laws protect individuals. However, other students noted that the laws were bad and said that the other students were wrong. The writer stopped the discussion and pointed out that philosophy was not concerned with right or wrong but with how people defend their positions. The students started over and were reminded by the writer not to attack other students. This observed behavior did not continue after repeated efforts by the writer, which showed that sixth-grade social studies students experienced limited exposure to a self-correcting critical-thinking environment.

Other philosophical direct-instruction sheets allowed students to identify main ideas of the The Republic by Plato, translated from Fry's (1977) readability formula. Students read the text and applied the vocabulary to answer low-level to high-level questions. With the use of Bloom's Taxonomy of Cognitive Skills handouts, students developed their own criteria for what is good, just, and fair and applied them through the creation of stories or fables. Students found this task complex because no one definition could be used, allowing students to defend and criticize the definitions of other students. This caused frustration because the writer used the Socratic method and introduced the opposing view of each definition or example the students provided for each term. Thirty students noted that philosophy caused "you to back up what you say." During the final class meeting of Greek philosophy, a content-area posttest assessed student ability to create the criteria of an abstract concept and student knowledge of the content.

The goal for Month 5 permitted the writer to meet with the targeted teachers (a) to identify their progress, (b) to identify their knowledge of critical thinking, and (c) to

identify various changes they implemented. Furthermore, the writer conducted a second observation of the targeted classrooms. The targeted teachers also met for the second inservice workshop. Moreover, the writer conducted a teacher panel discussion. This indicated that six teachers found the strategies useful. The goals for Month 6 permitted the writer to (a) conduct a teacher discussion, (b) prepare the second workshop agenda, and (c) introduce direct-instruction sheets to the teachers. The agenda for the 60-minute workshop included informing the targeted teachers about the nature of criterion-referenced knowledge through the method of discussion.

The last twelve class meetings focused on the Russian Revolution and its critical-thinking vocabulary, such as change, political revolution, workers, and class struggle. The writer used the textbook for the foundation of the topic and supplemented the students with philosophical direct-instruction sheets to identity Marxism and the conditions in 1917 Russia. Students read a translated text of Manifesto of the Communist Party by Marx and Engels to identify the concept of change, class struggle, and worker conditions. The writer deviated from the original plan because he developed three sheets for the study of Marxism: (a) the Russian Revolution, (b) Marxism, and (c) the Soviet Union. These sheets provided a total picture of the events of 1917, which affected the modern world. Students used the sheets to produce graphic organizers to help identify the conditions in Russia that led to the overthrow of the Czar. The writer used the yin and yang to model change. Students identified the role of dialectic change by observing the opposite forces in the yin and yang. Finally, students compared the yin and yang with their own relationships with their parent(s). Thirty-one students found that the role of change was based on conflict and that they conflicted with their parents based on clothes, music, and friends. The writer discussed this concept with the students and observed that they were able to identify differences between the dominant group and the emerging

group. This comparison was used by the writer to explain the concept of change and revolution.

The students used this knowledge to identify the reasons why Lenin took control over the people, and the students were able to evaluate his actions because they substituted themselves in a narrative story in which they applied their notes. The students also reflected in the notebooks the terms proletariat, dialectic reasoning, and exploitation and applied them to relevant real-life conditions in the other parts of the world or in their own situations. The students used the sheets to discuss whether Marxism could actually work, and the students found that greed would not allow Marxism to work.

Students discussed the global concerns of a nuclear holocaust and the relevant problems in Cuba through the final instruction sheet on the USSR, which contained information about the conditions in Cuba and the Cuban Missile Crisis. The main idea of Fail-Safe by Burdick and Wheeler was introduced in the direct-instruction sheet, allowing students to write about the possibilities of survival of a nuclear war in their local area. Thirty-two students became aware of the low survivability of such a horrible situation. Discussions and writings of the students showed that a hypothetical real-life concern allowed students to expand their critical-thinking skills. During the 35th class meeting, students engaged in a warm-up concerning a nuclear holocaust. The writer administered the final comprehensive content-area posttest to measure student knowledge of vocabulary and content-area knowledge of the Russian Revolution.

The goal for Month 7 included the finalization of the student component of implementation by administering the student journal responses (see Appendix N) and meeting with other key staff members concerning the results of implementation. During the last class meeting, the writer administered a posttest of critical-thinking vocabulary

and a postsurvey. The writer conducted a small review for Bloom's Taxonomy of Cognitive Skills action verbs. Moreover, the writer conducted his final observation of the targeted classrooms.

The writer created the content for the third and final inservice workshop. Teachers received a posttest on (a) critical-thinking vocabulary, (b) Bloom's Taxonomy of qu Cognitive Skills, (c) the nature of philosophy, and (d) cooperative learning and discussion methods. The writer administered the final teacher survey. The writer also spoke with the principal concerning a review of implementation and discussed the possibilities of interdisciplinary units with both Grade 7 and Grade 8 teachers. This support and encouragement provided the necessary motivation for implementation at the work site. Furthermore, the principal supported the writer meeting with the magnet coordinator to create a newsletter about the implementation.

In Month 8, the writer combined the material into a cohesive packet for the faculty and staff to review. The packet served as a method to analyze both strengths and weaknesses of the implementation. Moreover, the writer developed plans for incorporating the critical-thinking activities into the school's existing afterschool tutoring program. The principal advocated this method because it further supported the need for increasing student performance on state-mandated testing. The writer conducted a Social Studies Department conference on the preplanning days. The conference highlighted the possibilities of increasing the opportunities for critical thinking. The faculty examined the material; however, the writer observed that 13 teachers examined the new information with possible apprehension.

Chapter V: Results

Results

The problem in the writer's work setting was that sixth-grade social studies students performed below standard on content-area work and on teacher-made tests. Difficult activities engaged students in low-level work that required memorization of facts or details. The difficulty of an activity is not related to its complexity, as complexity requires students to apply, analyze, synthesize, or evaluate information. Thus, a content-area classroom that promoted difficult content-area work and difficult teacher-made performance tests decreased the probability that those students would develop critical-thinking skills, as memorization was promoted over application.

The goal of this applied dissertation was for sixth-grade social studies students to perform above standard on content-area work and on teacher-made performance tests. In order to obtain this goal, the solution incorporated (a) Bloom's Taxonomy of Cognitive Skills vocabulary, (b) philosophical material through direct instruction, and (c) teacher workshops. The objectives were analyzed to indicate success or failure of the project.

The following outcomes were projected:

1. Twenty of the 39 targeted sixth-grade social studies students will increase their content-area knowledge of social studies by scoring 75% or greater on teacher-made tests and on content-area work.

This outcome was met. However, only 35 of the original 39 targeted sixth-grade students remained and participated in the project. Thirty-four students scored above 75% or greater on the teacher-made tests and content-area work. The graded Stone Age instruction sheet ($M = 45.50$, $SD = 2.11$) and the content-area posttest ($M = 46.74$, $SD = 2.77$) indicated a significant correlation between the direct-instruction sheets and the content-area posttests (see Table 1). Moreover, graded discussions ($M = 45.24$,

Table 1

Correlations Between Treatment Variables and Content-Area Posttests

Variable	DIS	GD	PT
	Students (N = 35)		
Stone Age			
1. Direct-Instruction Sheets (DIS)	--	.42*	.73*
2. Graded Discussions (GD)		--	.42*
3. Posttest (PT)			--
Ancient Greece			
1. Direct-Instruction Sheets (DIS)	--	.54*	.54*
2. Graded Discussions (GD)		--	.37*
3. Posttest (PT)			--
Russian Revolution			
1. Direct-Instruction Sheets (DIS)	--	.87*	.57*
2. Graded Discussions (GD)		--	.54*
3. Posttest (PT)			--

* $p < .05$, two-tailed.

SD = 2.46) also produced a significant correlation with the content-area posttest and with the Stone Age direct-instruction sheet. This trend was noted in all of the other subsections of the treatment (Ancient Greece and Russian Revolution).

To preserve content validity, the mean scores of the Ancient Greek

direct-instruction sheets, which included logic, ethics, and Greek philosophy, were combined because these items were measured on one content-area posttest. The combined Ancient Greek direct-instruction sheets ($M = 45.82$, $SD = 2.10$) and the content-area posttest ($M = 45.82$, $SD = 2.90$) also showed a significant correlation. However, the Ancient Greek section, compared with the other sections, produced a lower, but significant, correlation. Discussions based on the Ancient Greek direct concepts and on the content-area posttest also produced a lower, but significant, correlation. Moreover, the Russian Revolution direct-instruction sheets ($M = 45.41$, $SD = 2.52$) and the content-area posttest ($M = 46.71$, $SD = 2.54$) positively affected student performance with a significant moderate correlation ($r = .54$, $p < .05$).

2. Twenty of the 39 targeted sixth-grade social studies students will demonstrate an increase in their knowledge of high-order thinking measured by a presurvey and a postsurvey.

This objective was met. Thirty-three students demonstrated a significant increase in their knowledge of high-order thinking. The postsurvey mean ($M = 84.85$, $SD = 11.43$) increased after the treatment, and the change in the standard deviation suggested that students who scored high on the presurvey ($M = 76.32$, $SD = 8.82$) also scored high on the postsurvey. In addition, this indicated that students who scored low on the presurvey also scored low on the postsurvey. The t-test showed a significant mean change $p < .05$ between the postsurvey and the presurvey. This suggested that students used the knowledge gained from the treatment and applied that knowledge to answer the survey questions. This survey only reported the ability of students to identify critical-thinking vocabulary. The postsurvey mean suggested that a wider distribution of responses reflected the students' ability to answer the questions.

3. Twenty of the 39 targeted sixth-grade social studies students will demonstrate

an increase in their verbal knowledge of Bloom's Taxonomy of Cognitive Skills vocabulary measured by a pretest and a posttest.

This objective was met. Thirty-four students increased their verbal knowledge of Bloom's Taxonomy of Cognitive Skills vocabulary. The differences in the posttest and the pretest demonstrated a statistically significant increase at $p < .05$ in student verbal knowledge. A paired-sample t-test showed that the posttest mean ($M = 89.62$, $SD = 9.84$) and the pretest mean ($M = 78.59$, $SD = 11.72$) reflected gain in student knowledge of critical-thinking vocabulary. The scores suggested that after the treatment, students began to score more alike because they became familiar with the material, and the range of scores decreased. This indicated that the uniqueness of the solution accounted for the dramatic change in scores because the majority of students demonstrated unfamiliarity with philosophy or critical-thinking vocabulary before implementation. A correlation analysis indicated a significant association ($r = .52$, $p < .05$) between student performance on Bloom's Taxonomy of Cognitive Skills action verb direct-instruction sheet and content-area posttests.

4. Five of the 9 sixth-grade content-area teachers will demonstrate an increase in their knowledge of critical thinking as measured by a pretest and a posttest.

This objective was met. Six teachers demonstrated an increase in their knowledge as shown by the posttest score ($M = 89.67$, $SD = 4.69$). The pretest ($M = 80.22$, $SD = 5.63$) score indicated the limited knowledge of the targeted teachers regarding critical-thinking knowledge. The change in the standard deviation indicated that the teachers' scores became more homogeneous as a result of the workshop. Nine teachers did not represent the total population of the school setting; however, the project targeted specifically teachers involved with sixth-grade students. These results suggested that the workshop positively contributed to the fulfillment of the objective.

5. Five of the 9 sixth-grade content-area teachers will increase their frequency of use of complex activities defined through Bloom's Taxonomy of Cognitive Skills as measured by a preobservation and a postobservation.

This objective was not met. Three teachers increased their frequency of use of complex activities, such as defining high-level vocabulary, developing their own questions, and high-level activities. However, simple activities such as defining low-level vocabulary, referring to the text, and knowledge-level activities did not decrease by five of the teachers. The decrease in the mean (see Table 2) of postobservation of simple activities only occurred by four of the teachers.

Table 2

Observation of Teacher Use of Complex and Simple Activities

Observation	M	SD	SEM
	Teachers (N = 9)		
Postobservation (a)	18.78	5.26	1.75
Preobservation (a)	13.33	5.59	1.86
Postobservation (b)	17.44	5.79	1.93
Preobservation (b)	19.11	6.92	2.31

Note. The value of (a) refers to the use of complex activities and the value of (b) refers to the use of simple activities.

The changes in the standard deviation indicated that the distribution of the scores was a result from the three teachers who increased their use of complex activities. However, the change in the standard deviation in the simple activities indicated that those teachers who had a high number of simple activities also had the same number or higher

number of simple activities in the postobservation. The workshop could have minimally contributed to the moderate increase in the use of complex activities; nonetheless, four teachers did decrease their use of simple activities.

6. Five of the 9 sixth-grade content-area teachers will demonstrate an increase in their ability to incorporate critical thinking in the classroom as measured by a presurvey and a postsurvey.

This objective was met. Seven teachers increased their postsurvey scores. The postsurvey mean (M = 71.67, SD = 5.41) showed a gain from the presurvey mean (M = 64.67, SD = 3.57). A paired-sample t-test indicated a significant change $p < .05$ in the teachers' ability to incorporate critical thinking in the classroom. Therefore, the change in the mean score suggested that the workshop did influence the significant increase identified in the postsurvey score. The decrease in the standard deviation suggested that more of the teachers began to score homogeneously due to the effects of the workshop. Thus, the uniqueness of the treatment indicated that the teachers were more likely to obtain and incorporate the information from the workshop.

The central theme of all the results indicated that the treatment provided opportunities for sixth-grade students to think critically in social studies. The results showed that direct-instruction methods provided useful knowledge in the pedagogical practices of incorporating complex ideas into the classroom. These results showed that vocabulary was essential to identify complex ideas and that the incorporation of Bloom's Taxonomy of Cognitive Skills in the classroom provided the foundation for question development on teacher-made tests and complex student activities. Student results were consistent with each other because the treatment incorporated a hierarchical method that built upon previous knowledge. Teacher results were not as consistent because the design only incorporated three workshops, probably only providing a limited amount of time to

impact all the behaviors of teachers. Thus, a more detailed and extensive workshop would be required to effectively change the behaviors of teachers. Nevertheless, the workshop did provide a forum for teachers to become exposed to new critical-thinking methods.

Discussion

This project shows that students who identified vocabulary possessed a more effective method to engage in complex thought. As Koltun and Biemiller (1999) noted, limitations in the application of vocabulary increased the probability that students would emit incorrect responses to inferential questions. The writer found that the use of direct instruction to teach students complex vocabulary helps alleviate this observed problem. The nature of the treatment built upon previous learned knowledge in order to apply that knowledge in complex activities. This supports Woloshyn et al. (1994), who suggested that students must use prior knowledge to gain new knowledge.

The pretests indicated a limited student vocabulary in critical thinking and philosophy. The treatment design reflected the methods of Davis and Rimm (1998), who noted that knowledge-type questions served as the foundation for critical thinking, allowing the classroom environment to function as a community of inquiry (Lipman, 1999) because students engaged in complex thinking. The correlation between the direct-instruction sheets and the content-area posttests also support Werner and Kaplan's findings (as cited in Robbins & Ehri, 1994), implying that students develop vocabulary from explicit or direct reference of objects and through incidental encounters with words in verbal contexts. The direct-instruction sheets served this purpose because the correlations indicate that the success on the content-area posttests were based on student performance on their direct-instruction sheets, familiarizing students with content-area knowledge. In addition, Williams (1997) found that such sheets provided the foundation for discussion. Discussions permitted students to engage in socially created

knowledge, despite their minimal influence on content-area posttest scores. Therefore, the treatment incorporated direct instruction to help students identify basic knowledge, which was then applied to discussions and to complex activities.

Vaddhanayana (1998) found that teachers must support student knowledge with vocabulary to improve their prior knowledge, which was then applied to newly acquired knowledge. As compared to other subjects of the treatment, the correlation between the Russian Revolution direct-instruction sheets and the content-area posttest suggest that the students learned how to apply the vocabulary. The scores indicate a gradual increase in student ability. The sheets themselves provided students with vocabulary and questions that reinforced low-level knowledge and their ability to apply that knowledge to complex activities. The correlation between the direct-instruction sheets and the content-area posttests also support Berg et al.'s (1998) findings that direct instruction permitted students to progress and then allowed the students to engage in complex activities. This suggests that the direct-instruction sheets of the first two subsections, the Stone Age and Ancient Greece, provided the necessary experiences to positively reinforce their application of low-level knowledge to high-level activities, as expressed in the scores of the Russian Revolution subsection. The evidence shows that the final phase of the treatment provided reinforcement for the students to gain the necessary skills to apply low-level knowledge to perform at the higher levels of thinking. Despite the significant correlation ($r = .54$, $p < .05$) between the Ancient Greek direct-instruction sheets and the content-area posttest, it produced a moderate relationship. This points out that Ancient Greek philosophical concepts were possibly more difficult to grasp.

Despite the use of direct instruction, Ancient Greek concepts might have been more difficult to grasp. These concepts involved more jargon and traditional philosophy, with which the sixth-grade students had a harder time in identifying, as compared with the

other aspects of the treatment. This supports Robbins and Ehri (1994), who found that students with larger vocabularies were able to identify words based on the context of the text; and students who possessed smaller vocabularies could not. This could explain why the concepts for discussion could have been more difficult for 30 students to identify, such as idealism and the "Simile of the Cave" in the Republic according to student journals. However, if the sheets were not used, then it was more likely that students would not have been able to identify the concepts. This implies that if regular curriculum involved difficult concepts to grasp without the use of direct instruction, then students could experience frustration.

The combined student mean average provided the necessary criteria for improving student performance. The first objective was met and revealed a moderate to substantial correlation. This suggests that the format which incorporated low-level knowledge to apply to high-level knowledge shows promise. This evidence indicates that speaking and writing the key vocabulary positively influenced the verbal skills of the students. Simpson (1996) supported this method because he noted that writing the words down and applying them to an activity increased the ability of students to identify vocabulary words and their meanings. This implies that the students were more likely to identify the key concepts of philosophy through the influence of discussion and the direct-instruction sheets.

Moreover, according to student journals, 23 students identified that the textbook that they used only showed one possible point of view about the migration during the Stone Age study. Students indicated that their textbook was limited and incorrect because through discussions, students presented their own findings, supported by the positive correlation between the direct-instruction sheets and classroom discussions. Moreover, student response journals noted that 26 students became more familiar with the key

vocabulary related to inductive and deductive reasoning because of the treatment. These reasoning skills functioned as the basis for critical-thinking skills. Students applied these skills to discussions, classwork, and tests. This knowledge permitted students to develop criteria that provided evidence for their answers. Thirty-four students performed above average in reasoning because they applied these skills to pragmatic activities and these assignments reflected relevance.

Philosophy based on student posttest and direct-instruction sheet performance encouraged an increase in student critical thinking. The treatment employed some traditional philosophical concepts, such as idealism, utilitarianism, and dialectics; but exposure to direct instruction helped them to identify their meaning. The lower scores indicated that students possessed a limited vocabulary for philosophical terms, but their performance increased, which attributed to the treatment. The writer showed the possibility that students could identify traditional philosophy. The evidence suggests that simple questions made the content more relevant and complex. Discussions based on high-level questions from the direct-instruction sheets contained some simple questions. This method supports Kucan and Beck (1997), who noted that thinking aloud affected student comprehension. Simple questions such as "What is this about?" promoted critical thinking (Kucan & Beck). This treatment did not suggest adding philosophy to solve all the complex thinking problems, but it showed one possibility to make students think beyond the knowledge and comprehension levels. Direct instruction alone only provides the foundation for the necessary knowledge for students to identify high-level questions. Teachers must provide the necessary classroom environment to permit students to think critically.

The Bloom's Taxonomy of Cognitive Skills action verb direct-instruction sheet allowed students to write down information and manipulate the verbs of Bloom's

Taxonomy of Cognitive Skills. Blank-Libra (1997) and Hettich (1993) supported the use of Bloom's Taxonomy of Cognitive Skills action verb direct-instruction sheet. Blank-Libra and Hettich used these sheets for question development, but the writer used such a sheet as the basis of knowledge for the students. Students used the sheet to identify high-level vocabulary and applied the vocabulary to complex activities. This method supports Robinson (1994), who suggested that student answers were clearer with supportive evidence from texts, other students, and notes, supporting the use of direct-instruction sheets.

Students identified the function of words used in questions and the nature of high-level questions. The positive correlation between the content-area posttests and the direct-instruction sheets with Bloom's Taxonomy of Cognitive Skills action verb direct-instruction sheet indicate that when students were able to identify the high-level vocabulary, that knowledge influenced their ability to identify high-level questions. Student ability to identify such questions allowed them to become familiar with the nature of questioning. However, not all students could benefit from this approach due to limitations in reading affecting their vocabulary. The students used in this project possessed average- to above-average reading skills, indicated by the pretest scores; and they demonstrated unfamiliarity with philosophy and critical thinking.

The treatment was not designed for an improvement in reading comprehension or other reading problems, but as a method to show the possibility that philosophy and direct instruction could improve critical-thinking skills. The pretest and posttest that measured student critical-thinking vocabulary suggested that teaching students Bloom's Taxonomy of Cognitive Skills was a worthwhile activity. Exposing students to jargon did not correlate to effective critical-thinking methods. As the writer noted, critical-thinking jargon confused students because they did not possess the specialized vocabulary.

However, after the treatment, students could identify the terms evaluate or justify, allowing them to support their answers on high-level questions.

Philosophical thought allowed students to identify their own thinking skills through logic and ethics, resembling real-life issues. This part of the treatment employed traditional philosophy and presented students with more complex concepts to grasp. The use of logic and ethics did permit students to engage in talk about current issues. However, the limitations of this approach relies on the ability of the writer. Traditional philosophy allows students to examine issues and to provide evidence for their claims about current issues. The treatment permitted students to think about real-life or fictional issues, which supports Lipman (1994), who noted that simple questions such as "What is reality?" sufficed as critical thinking. The evidence contradicts Fox (1998), who suggested students could study traditional philosophy because of its long line of literature. High-school or eighth-grade students could possibly study more traditional philosophy; sixth-grade students should still engage in philosophy but engage in questions that (a) apply low-level knowledge, (b) promote relevance to the topic, and (c) require criteria for an answer.

Ancient Greece provided the background for Greek philosophy, but many of the terms did not promote relevance to the subject matter, unlike the Stone Age and the Russian Revolution. The Stone Age provided ample opportunities for critical thinking because it promoted relevance and allowed students to use evidence from the text or other sources to develop their own theories. The critical-thinking activities incorporated cooperative groups, such as the panel discussions, allowing students to discuss the material. Thus, discussions and cooperative groups functioned as direct instruction, supporting Goldenberg (1993), who noted that teaching groups through direct methods influenced student conversations.

The use of inductive reasoning familiarized students with the collection of evidence, reinforcing them to provide support from the text. Thus, the direct-instruction sheets provided sufficient direct instruction, allowing students to engage in creating their own theories. This type of philosophical interest turned the classroom into a community of inquiry (Lipman, 1999). The treatment allowed students to engage in Bloom's Taxonomy of Cognitive Skills through such activities, as the evidence suggests from the pretest and the posttest scores and the significant correlations.

The teacher-based objectives indicated that teachers need to become more motivated to learn new approaches. The time of year and the time of day probably influenced the postsurvey and posttest of critical-thinking scores. The significant increase in scores could reflect reactive arrangements because they knew they were in a project and wanted the results to appear that they had learned information, due to the majority of the teachers being new teachers. However, based on teacher responses, seven teachers noted that the workshop presented them with a worthwhile method. Moreover, a 180-minute workshop was not enough to effectively demonstrate the tools of change; yet, this workshop was better than no workshop.

The nonparticipant observation influenced its results because teachers knew about the observation. Thus, the change in preobservation and postobservation of complex activities indicates some effect from the workshop, but teachers still incorporated more simple activities which could have resulted from instrumentation of the observer or particular events of that day. The increase in complex activities suggests that these teachers possessed the foundation for a willingness to change. This section of the project further suggests that despite the curriculum of the workshop, the method used encountered too many variables to promote absolute generalizability of the results from the targeted group of teachers. Nevertheless, the workshop allowed teachers to engage in

dialogue, which could be replicated at other work sites. Specific modifications could adjust the curriculum and the nature of the workshop to function at any particular work setting.

The one group pretest and posttest design limited the project, regardless of the significant correlations and the differences in the means. The writer used a single-group pretest and posttest design because many variables possessed minimal risk. This was asserted because the treatment incorporated such a unique solution for the writer's work setting. Philosophy as used in this treatment did not exist at the work setting; thus, the writer incorporated only a single-group design. The student population used in the project represented the total population of the school, which ranged from average to gifted students. The writer only incorporated one exceptional student; however, this student comprehended well and performed above-average work. Even though the nature of the treatment could explain changes in participant behavior, the project design did not account for some threats to its internal validity, such as maturation, history, testing, instrumentation, and regression.

These variables could have possibly altered the increases in performance. Maturation of the students could explain why the results indicate an increase in the pretest and posttest scores. The treatment time only existed for 3 months; however, in that span of time, boredom emerged in some students. The writer noted in his journal that 16 students became disruptive when they did not understand a concept. In addition, seven students expressed that the direct-instruction sheets became mundane, noting "Oh, not another sheet." This feeling was expressed by a few students, however their scores made up the average mean score, which could have accounted for changes in performance. The length of the project and the time of year also could have affected the increase in performance.

The writer conducted the project toward the middle of the year to reduce the effects of these variables.

Moreover, student history could have attributed to the increase in student performance. The nature of the treatment incorporated philosophy into the sixth-grade social studies curriculum. Other content-area teachers did not incorporate philosophy into their curriculum, but possibly some teachers incorporated complex thinking. A conversation with the language arts teacher of the targeted students revealed that she allowed the students to identify issues of change and revolution in a novel the students read. This could have attributed to the increased performance in the Russian Revolution subsection. Despite their exposure to the novel, student ability to identify philosophical concepts of Marxism and exploitation was strongly attributed to the treatment. Many of the teachers did not express Bloom's Taxonomy of Cognitive Skills to students, also strongly suggesting that the students learned the material from the treatment.

The pretest experience could have also accounted for the increases in the posttest scores. The pretest itself could contain information that the students remember on the posttest. The single-group design did not account for such a variable; however, the student scores themselves indicated student unfamiliarity to the nature of critical thinking. Thus, a highly probable assertion expressed the belief that student unfamiliarity of critical thinking, indicated by the pretest scores, suggests that the only method reasonable to account for changes in the posttest scores was student exposure to the treatment. Furthermore, content validity of the content-area posttests dictated the use of these tests as only posttests. A pretest experience limited the testing threat to the posttest results. The students did not learn the content, such as the Stone Age, Ancient Greece, and the Russian Revolution, before the treatment. If the students received a pretest to identify their knowledge of content-area material, then quite possibility, an increase in their

content-area posttest scores would have been attributed to the pretest, not to the treatment. Thus, testing variables provided a possible explanation for the increase in content-area posttest scores, given the limited design, however unlikely, due to the uniqueness of the treatment.

Instrumentation of the design could have further limited internal validity. The instruments used for teacher observation showed possible limitations. The instrument proved more complex than originally intended. The role of teacher observations tried only to measure the frequency of use of complex activities. Despite the operationalized definition of complex activities on the observation instrument, it proved to be inadequate. It was inadequate because it accounted for both complex and simple activities performed by the teacher. The nonparticipant observation also influenced the observation outcomes because the targeted teachers knew they were under observation. This might have altered the true nature of the teacher behaviors. The instrument only provided the frequency of behaviors; and, without qualitative data, the presented factual statements state very little about the behavior. The instrument needs improvement. Moreover, the writer developed rubrics to grade discussions and direct-instruction sheets. The rubrics provided an easier system to grade the material, which, more likely, decreased the role of instrumentation as a threat to internal validity. Finally, regression represented a threat to this project design.

The group of students who participated produced an extreme group who learned faster than other students. This resulted from not using a random assignment.
The group of participants participating may have contained an extreme group of students whose scores might have increased as a result of maturing, not due to the treatment. The group of participants were selected based on quota methods; therefore, the pretest and posttest scores of each group could have been raised because of the selection-maturation of the participants. This limitation existed in the sample because the selected students

from three different classes could have contained an extreme group of students who performed better, regardless of the treatment. Regression represented a potential confound problem for the design. To obtain a random assignment went beyond the control of the writer.

Nevertheless, it was more likely that the treatment made some difference because of the limited student prior knowledge of critical thinking indicated by the pretests. This suggests that student knowledge demonstrated on the posttests was more likely attributed to student exposure to the treatment. The evidence did not conclusively suggest that direct instruction and philosophy caused the increases in student performance, but such treatments showed a positive relationship which attributed to the increases in student critical thinking and student performance.

Threats to the internal validity provided an explanation for the limitations of this project. The threats presented alternatives to account for increases in performance because of the limited project design. The uniqueness of the treatment to the work site of the writer justified the design; however, a better project would provide more conclusive evidence about the nature of philosophy through direct instruction and its affect on reading, critical thinking, and discussions. The limitations in the internal validity also suggest limitations in the external validity.

The findings offer a limited role of generalizability of the project. Teaching both philosophical concepts and Bloom's Taxonomy of Cognitive Skills vocabulary through direct-instructional methods showed to be worthwhile. However, it was less likely to reproduce such findings at other work settings given several limitations in the internal validity of the project. The project could be reproduced with a quasi-experimental model to increase the likelihood of the role of philosophy and its affect on critical thinking through direct instruction. Moreover, the quota sampling used produced a selection and

treatment interaction because the sample of the writer's work setting did not incorporate philosophy or any other type of advanced critical-thinking methods. In other schools, such methods might be employed; however, the uniqueness of the treatment suggests that other work settings were less likely to incorporate such a unique treatment. In addition, six students noted in their journals that they were being used in a project for their teacher. This provides some evidence of a reactive arrangement because the writer used consent forms and explained the project to the students. True replication of the project is impossible because of the uniqueness of subjects and the fact that humans react differently to varying environments. Robson (1997) noted that to replicate a project exactly is difficult; but, to repeat a project as close as possible is desirable.

The evidence shows that a positive relationship existed when students used direct instruction to identify vocabulary words. This provided the basic low-level knowledge, allowing students to engage in high-level activities. Student engagement in content-area work produced a positive correlation with the direct-instruction sheets, which incorporated philosophical knowledge. The use of graphic organizers and cooperative groups helped with discussions to increase student engagement in direct instruction. Thirty students found that philosophy helped them with critical thinking and 32 students found philosophy interesting. The positive experience for students suggests that philosophical thinking transformed social studies into a community of inquiry (Lipman, 1999). This community allowed students to express their ideas and provided opportunities for students to support the reasons for their beliefs. The treatment allowed students to question the foundation of knowledge because the students realized that many views can exist to explain why things happened in history.

The evidence also points out that simple questions, rather than traditional philosophy, sufficed for increasing student metacognition, allowing them to increase their

critical-thinking skills. Incorporating traditional philosophy produced more jargon, making the content irrelevant to social studies. This resulted because learning such material went beyond the verbal experience of sixth-grade social studies students. Despite the limitations with the validity of the project, the results show incorporating critical thinking into the classroom through a hierarchical Bloom's Taxonomy of Cognitive Skills design could increase student performance. Therefore, the null hypothesis could be rejected because the project found that philosophy, direct instruction, and Bloom's Taxonomy of Cognitive Skills positively attributed to the increase in student performance.

Moreover, the performance of teachers must become focused on the need to improve their current situation. New data emerged that can help change their paradigm to incorporate new methods to improve student critical thinking, as confirmed by Tewel (1997). The teacher workshop was shown to be helpful in measuring teacher knowledge of critical thinking on the pretest and the posttest. However, the practice of such new materials could not be forced upon teachers because they need to be willing to change, which was supported by the changes between the teacher postobservation and preobservation of complex and simple activities. Each classroom situation was unique, and the time of day and the time of year influenced teacher behaviors. The workshop exposed nine teachers to a different point of view, indicating that a larger target group may be needed for a future project. This project was shown to be a worthwhile investigation because the subjects received exposure to a unique treatment. The treatment was unique because it was less likely to exist in the majority of middle schools. This represented the first step in adding to the literature on new methods to promote change with regard to critical thinking.

Recommendations

This project suggests that questions provide the foundation for knowledge. The

solution strategy could further solve the problem by focusing more on simplified questions. In conjunction with vocabulary development, activities that promoted student engagement in content relevant work allowed students to own the work which attributed to an increase in performance. The classroom environment must reflect the teacher as one who provides a classroom of inquiry rather than a classroom of regurgitation of facts and details. Teachers must modify this solution to their particular environment because many teachers may not know the principles of philosophy or direct instruction. The writer offers the following as recommendations for possible modification of the solution:

1. The use of simplified questions would suffice for philosophical inquiry. This would allow students to justify their answers.

2. Traditional philosophy could supplement the text of interest in social studies. For example, if students studied feudalism, then students could research medieval philosophical topics, such as the church, Geocentricism, and Occam's Razor.

3. Teachers must focus on the application of vocabulary into complex activities and tests.

4. Teachers must incorporate Bloom's Taxonomy of Cognitive Skills action verbs as part of their curriculum. Teaching students the vocabulary of Bloom's Taxonomy of Cognitive Skills would help them to distinguish between low-level and high-level questions.

5. If students possess problems in reading, then teachers should concentrate on solving the reading problems before implementing philosophy as critical thinking.

6. Social studies teachers should communicate with the language arts teachers to develop lessons that focus on content and incorporate elements of philosophy. For example, students in social studies could learn about the need for government, while in language arts students could read parts of Lord of the Flies by Golding and justify why

humans need government. Moreover, students could read parts of Animal Farm by Orwell in their language arts classes to further identify the concepts of the Russian Revolution.

7. Teachers should not focus on jargon of critical thinking or focus only on vocabulary. Focusing too much on vocabulary without application decreases the relevance of the material.

8. Develop activities that engage students so that they become members of history. For example, students who function as archaeologists or as revolutionaries would be able to apply the vocabulary of critical thinking and engage in complex activities.

9. Teachers could create their own supplemental worksheets to supplement the text with complex activities. Worksheets should contain low-level material, such as definitions and low-order questions. This method ensures that students apply that knowledge toward high-level activities at the end of the worksheets.

10. Graphic organizers should serve as direct instruction that functions as the foundation for discussions and cooperative learning.

11. Teachers know their students the best, so they must take what they find useful and make it their own.

Dissemination

The data was presented at both faculty and department meetings. This ensured that the majority of teachers became exposed to the literature and the solution strategies concerning critical thinking. The methods used for this applied dissertation will be published in a school newsletter. The results also will serve as a foundation for a parental seminar to teach parents critical-thinking aspects. Finally, the writer possesses many opportunities for submitting the literature review and the research proposal to numerous conferences concerning critical thinking, behavioral sciences, and philosophy. In addition,

the writer has shared the concept of Bloom's Taxonomy of Cognitive Skills with local college faculty to increase their pedagogical practices. They reacted with caution because many college instructors possess limited pedagogical knowledge. However, after the writer engaged them into relevant cooperative learning, allowing them to apply Bloom's Taxonomy of Cognitive Skills, the faculty became more interested in the work.

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Appendix A

Preimplementation Teacher Survey

This survey is designed to help identify the current view on critical thinking.
Please circle the most appropriate response.

1. Identify the amount of time you currently spend on low-level activities.
   More than 25 minutes Less than 25 minutes

2. Do you regularly give students activities that allow them to think beyond the knowledge and comprehension levels. Yes or No

3. Does the current curriculum support a critical-thinking environment?
   Yes or No

4. Does the current time schedule provide sufficient time for teaching critical thinking?
   Yes or No

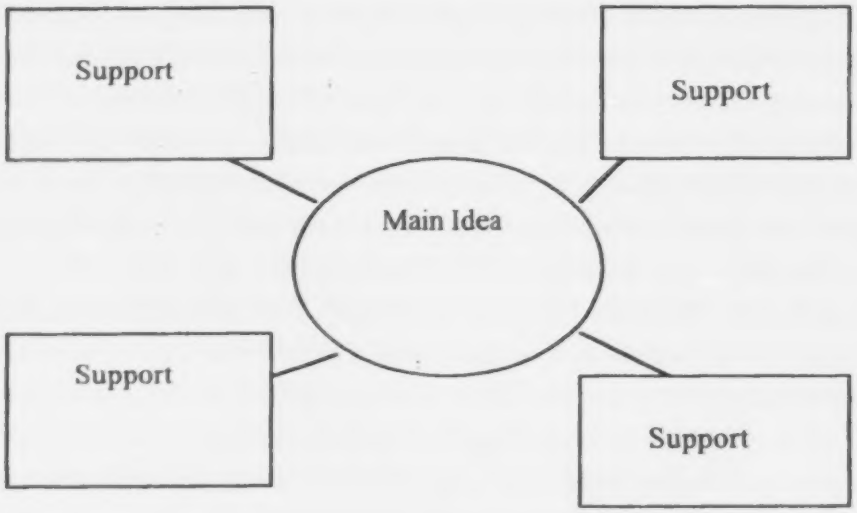
5. Rate your current in-depth knowledge of Bloom's Taxonomy of Cognitive Skills.
   High Moderate Low

Appendix B

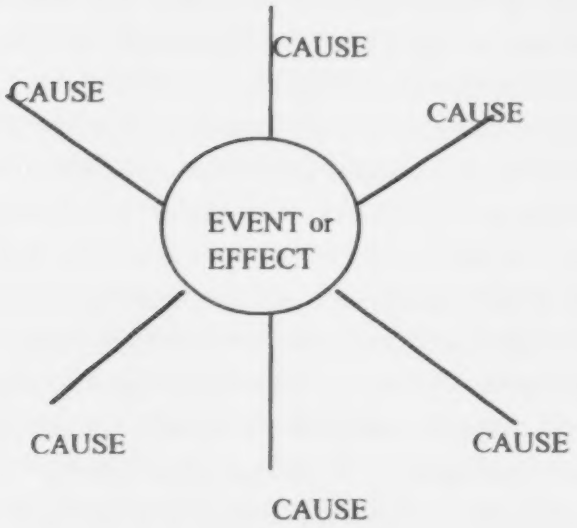
Graphic Organizers

GRAPHIC ORGANIZERS

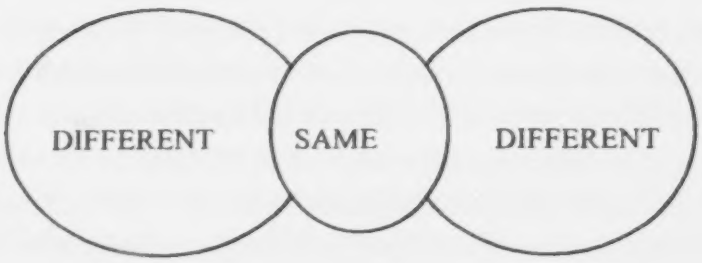
1



2



3



Appendix C

Stone Age Direct-Instruction Sheet

Information to Know about the Stone Age

A. WORDS TO KNOW AND DISUCSS.

Hypothesis Theory Infer Evidence Inductive Deductive Culture Society

B. USE EACH WORD IN A SENTENCE

C. FIND THE ANSWER TO THE FOLLOWING

1. What do archeologists use to prove their beliefs?
2. What is culture?
3. How are theories created?

D. READING SELECTION

During the Stone Age, humans used stone for tools and weapons. Archeologists are individuals who study how humans lived in the past. They use artifacts and cave paintings as evidence. Evidence is used to support their beliefs about human life during the Stone Age. The evidence is used to create a hypothesis. A hypothesis is an educated guess about human life. The hypothesis is used to create a theory, which uses evidence to try and explain how humans lived.

This allows individuals to understand culture. Culture is the way of life of a group to meet certain needs. A group of people who have similar ways of life is called a society. A society can be seen in many different places, such as in a gang, in a chess club, and in ants. Ants have culture because they have: government, workers, structures, work for the the colony, and have language. This criteria shows that ant and human cultures are similar and different.

Evidence makes a theory likely to be true, but a theory is never 100% true. Tools archeologists use are similar to police work because they try to solve mysteries. They use inductive reasoning and deductive reasoning. Inductive reasoning means that a person can identify the possibility of something based on the evidence the person finds. For example, if it is cloudy and windy, then based on this evidence, a person can infer (tells) or draw a conclusion that a storm is likely to happen.

Inductive reasoning uses the words most likely, suggests, or probably. Deductive reasoning is used in math because it is certain and necessary. For example, $2 + 2 = 4$ is certain. Deductive reasoning is used to make sure that a person's thinking is ordered, such as if a=b, b=c, then a=c. Deductive reasoning is not based on evidence, but on certainty.

The make-believe detective Sherlock Holmes used both types of reasoning to solve his mysteries. Archeologists, like detectives of the past, use these skills to develop hypotheses which turn into theories to explain human life.

One problem with evidence is conflict. The conflict with evidence creates many theories of explanation. For example, there are many theories to explain how and why humans settled in North America. Based on the evidence, some believe humans came from Europe, Australia, or Asia by boat or walked across the land bridge. This conflict of evidence allows archeologists to debate and "find the truth."

E. HIGH-ORDER THINKING AND DISCUSSSION

1. Compare and contrast inductive and deductive reasoning.
2. From the evidence you found, create a hypothesis about the bone tools, and write a small theory explaining how humans used the bone tools and from what animals (include the inductive words, evidence suggests or most likely).
3. If you found sharpened rocks around a burial site, then what can you infer from those rocks. Why?
4. Support one theory used to explain human migration through a panel discussion.
5. If you landed on a different planet, then develop a report comparing and contrasting an alien culture to human culture using criteria.

Appendix D

Ancient Greek Direct-Instruction Sheets

Information to Know about Greek Philosophy

A. DISCUSS THE MEANING OF THE FOLLOWING

Philosophy Reality Idealism Empiricism Metaphysics Plato Socrates Aristotle

B. USE THE NEW WORDS IN A SENTENCE

C. READ THE SELECTION OF ANSWER THE FOLLOWING

1. What is philosophy?
2. Who are Aristotle, Plato, and Socrates?
3. How does one know reality?

D. READING SELECTION

What is philosophy? It is the love of wisdom. Philosophers use their minds to think about topics, such as life, government, and the universe. They use logic and reasoning skills as tools to find out about a topic. Philosophers look at the world and make some kind of order of it. They are curious individuals and they think. Greek philosophy is concerned with the nature of reality or metaphysics.

Greek philosophy asks: Is the universe always changing or is it unchanging? Can you step in the same river twice? Idealism states that reality is the mind or ideas. Yes, you can step in the same river twice because the river exists even though it is changed. The idea of the river has been unchanged. For example, if a piece of chalk is crushed into dust, then how do you know it was chalk? The only way to know the chalk is through its never changing Idea.

Empiricism states that humans have to see the world to know it. The world is always in change, so no, a person can never step in the same river twice. The world of things exists separate from their Ideas. The slightest change will alter the river and so the river is different. Ideas do not exist, according to empiricism.

Socrates was put to death for corrupting the youth and not believing in the state approved gods. He argued over the definitions of terms about justice, fair, good, and beauty. Plato stated that Ideas are real. The real world is the world of Ideas and that physical objects are copies of the world of Ideas. Aristotle stated that the world is made-up of things. Humans know things through their senses. He also stated that the earth is the center of the universe.

E. IDENTIFY WHAT YOU READ

1-Socrates was put to death because of _____.
2-Idealism states that you cannot step in the same river twice. True or False
3-Aristotle would have agreed with Plato. True or False
4-_____ is the love of wisdom.
5-_____ stated that the world of things are real.

F. HIGH-ORDER THINKING AND DISCUSSION

1-Compare and contrast idealism and empiricism.

2-Would you put Socrates to death? Why or Why not?

3-Create your own definition for criteria for the beautiful, good, or fair.

4-Explain the real world through an idealist or an empiricist point of view.

5-What is reality? Why?

Issues in Philosophy and Philosophers

Directions: Use the Philosophy Sheets to help answer the following.

Issues in Philosophy

Provide answers to the following issues in philosophy. Long response 4-6 sentences, use inductive and deductive reasoning.

1) How can you distinguish the real world from your dream?

2) What is the Good, Justice, and Fairness?

3) How can you tell if a person is thinking?

4) What is the purpose of government?

5) Do events happen for a reason?

6) Are numbers real?

7) Is the individual or the greater good more important?

8) If you doubt your senses, then how do you know anything for certain?

9) What is truth?

10) Can humans live in harmony with each other?

11) What are relevant problems that philosophers must deal with today?

Philosophers

Create a brief report on a philosopher.
Identify: Who they were; When and where they lived.

Socrates-definitions
Plato-ideas are real
Aristotle-things are real
D. Hume-nothing is certain
A. Ayer-words must be verified
I. Kant -people get what they deserve
A. Schopenhauer-world is how I see it
J. Locke-knowledge from experince
R. Descartes-I think, I am; doubt senses
F. Hegel-history is determined by ideas
K. Marx-history is determined by humans
T. Aquinas-prove the design of nature

"Simile of the Cave"

A) WORDS YOU SHOULD IDENTIFY

Shadows Images Enlightened Represented Simile

B) NEW WORDS USED IN A SENTENCE

1-The object castes a shadow on the wall.

2-The shadow produced an image of the jar.

3-The student became enlightened after learning the material.

4-The lawyer represented the person on trial.

5- The comparison between the human brain and the computer is a simile.

C) FIND THE ANSWERS TO THE FOLLOWING

1-Who was in the cave?

2-What did the people see on the wall?

3-What do the objects represent?

D) READING SELECTION

Imagine humans who lived in a cave where the only light came from the opening. These humans are tied up from childhood. They cannot move their heads and can only face the wall inside the cave. Behind them, a fire is going, and between the people and the fire a table exists where objects are placed. The fire castes the objects' shadows on the cave wall. The humans can only see the shadows.

Humans believe that the shadows on the wall are real. They think that what they see is reality. However, one human escapes and learns about the world of color and actual reality. That person became enlightened about the poor condition of humanity. Plato used the cave story to explain the concept of IDEAS. The actual reality represents the IDEAS of objects and the shadows represent the physical objects humans touch and see.

E) IDENTIFY WHAT YOU READ

1-_____ are perfect and real.

2-_____ represent the world of things.

3-The objects on the table represent the world of IDEAS True or False.

F) HIGH-ORDER THINKING AND DISCUSSION

1-Create your own story about how humans can know reality.

2-Compare the cave story and the world of IDEAS.

3-What do you think reality is? Why?

4-Evaluate Plato's concept of IDEAS to explain reality.

5-Do you support idealism? Why or why not?

Information to Know about Ethics

A. WORDS TO KNOW AND DISCUSS

Ethics Utilitarianism Morals Deserve Action Greater Good

B. NEW WORDS USED IN A SENTENCE

1. The person used ethical thought to decide if he should tell his friend about the problem.
2. One type of ethical reasoning is utilitarianism which means to act for the greatest amount of good for the greatest amount of people.
3. The morals of the country does not permit underage drinking.
4. The criminal received twenty years, so Joe said he got what he deserved.
5. The criminal's action or behavior determined his punishment.
6. People who act toward the greater good want to benefit all of society.

C. FIND THE ANSWER TO THE FOLLOWING

1. What is the greater good?
2. Why does a society have laws?
3. What is utilitarianism?

D. READING SELECTION

Ethics refers to the study of human action. Every action a human makes produces consequences. So, humans must study how to act in order to produce minimal consequences. The accepted beliefs of a society create its morals. The morals of a society determine what is right or wrong. What is right or wrong can be debated.

Utilitarianism states that human action depends on the greatest amount of good for the greatest amount of people. This means that the needs of group out way the needs of the one. For example, killing one person to save thousands of people is justified. It also measures the amount of good or bad an action produces. If an action produces more bad than good results then the act is not done. If lying to your friend creates more bad results, then do not lie.

The accepted beliefs of a society determine its laws. Laws keep society in order. Criminals who break the law usually receive punishment. This means that they get what they deserve. Utilitarianism states that if punishing a person will stop 100 others from committing a crime, then the greater good is served. Guilt or innocence does not matter.

Think about the following ethical problems. If humans develop clones, then can they use clones for spare parts? Do clones have feelings or rights? If humans develop artificial intelligence (AI), then how do humans make them part of their culture? How can humans determine AI? How do humans make decisions everyday? Should people lie? When is a lie necessary? Are selt belt and hemelt laws just? Another philosophy states humans need to act responsible and need to be punished if they act immoral.

E. HIGH-ORDER QUESTIONS AND DISCUSSION

1.Should a criminal get what they deserve? Why or Why not?

2. Should the court ask why a person committed a crime? Why?

3. Create a scenario where you need to use ethical reasoning to solve a problem.

4. If you were on a lifeboat, then how would you and the others determine the decisions for the boat. Use the Utilitarian approach or you own.

5. If you were a general, then could you send an innocent person to certain death in order to save the group? Why or Why not?

Appendix E

Russian Revolution Direct-Instruction Sheets

Information to know about Marxism

A. WORDS TO KNOW AND DISCUSS

Dialectic Materialism Proletariat Class Struggle Exploitation Bourgeoisie Labor Revolution Karl Marx Fred Engels Communism Capitalism Economics Private Property

B. NEW WORDS USED IN A SENTENCE

1. Dialectic reasoning means that an opposite exists in everything.
2. The view that the world is made up of concrete things is materialism.
3. A worker is called a proletariat.
4. The conflict between those who own private property and those who do not own private property is a class struggle.
5. Exploitation is being used without full pay.
6. Bourgeoisie are the rich town people.
7. Economics is how humans produce goods.
8. The worker uses his/her labor to create things.
9. Revolution is the violent act of change in politics.
10. Karl Marx is a philosopher who founded communism.
11. Marx's friend who helped him is Fred Engels.
12. Communism means that everyone lives according to one's ability and need.
13. The economic system that promotes competition is called capitalism.
14. What people own is considered private property.

C. FIND THE ANSWER TO THE FOLLOWING

1. How are ideas created?
2. Why does a revolution happen?
3. What is a class struggle?

D. READING SELECTION

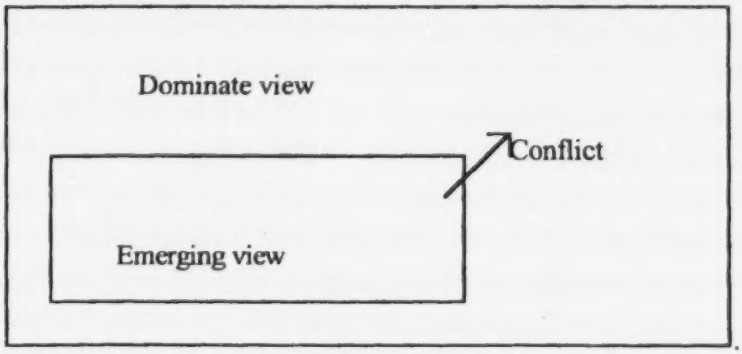
Marx created communism. Communism is a philosophy that states that everyone should work together and do away with private property. In 1848, Marx and Engels wrote a book called the Communist Manifesto where they argued the communist point. Marx noted that the economic system of capitalism takes advantage or exploits the workers or proletariat. The bourgeoisie or rich people exploits the workers because the rich does not pay them what they are worth.

Marx stated that history is a class struggle. The relationship between the bourgeoisie and the proletariat causes conflict. This conflict breeds anger in the one group (workers) because their environment is horrible. The thought of revolution or overthrow of the government comes from the workers' horrible material environment. The material environment world or the world of things produce thought. The worker's idea of freedom comes from working in factories all day for little pay.

Thus, people from different material environments will express different ideas. Boys and girls from the same environment have similar things in common. Two girls or two boys from different environment have less in common. For example, a rich person goes to the mall and buys anything without question, however a poor person goes to the mall and maybe just looks around.

The system of thought that shows how opposite forces cause change is dialectic reasoning. This means that the opposite view is contained in the dominate view. The conflict between opposites cause things to change For example, the yin/yang shows how one color (white) contains its opposite (black). Another example states that children are opposite of their parents.

Parents represent the dominant view (white), and the children, who represent the emerging view (black) grow, they might differ from their parents. They become in conflict with their parents because their environment is different from their parents (music, school, TV). When the children move on and start their own family, then they become the dominant view. Dialectics is shown in the following diagram:



History changes according to dialectic reasoning. History changes because of opposing forces in how humans produce goods or economics. Economics changes how humans produce goods. As a result, revolution happens and human society changes.

For example, in capitalism, the conflict between the workers and the rich will lead to communism. Workers are tools for the factory owners. They function as tools and their labor produces goods. Workers lose their humanity because they become tools for the factory owner to buy and sell.

Marx claimed that philosophers only interpret the world, but the point is to change it.

E. HIGH-ORDER THINKING AND DISCUSSION

1. Create a journal describing the condition of the workers.
2. People from different environment have different thoughts? Why?
3. Does conflict lead to change? Why?
4. Could a communist society exist? Why or Why not?
5. Evaluate capitalism. Is it fair? Why?
6. What do you think Marx meant by his claim? Why?

Information about the Russian Revolution

A. WORDS TO KNOW AND DISCUSS

Lenin Bolshevik Stalin Trotsky Czar Nicholas II Bloody Sunday
World War I Dictatorship of the Proletariat Intelligentsia

B.NEW WORDS USED IN A SENTENCE

1. Lenin was the revolutionary leader in Russia.
2. The Bolsheviks were the communist revolutionaries.
3. Stalin was a brutal dictator who took over after Lenin died.
4. Trotsky was the political philosopher in Russia.
5. The leader of Russia before the Revolution was Czar (Caesar) Nicholas II.
6. In 1905, the army of the Czar shot their own people protesting for food known as Bloody Sunday.
7. War in which Russia was suffering badly in was World War I.
8. The worker state is called the dictatorship of the proletariat.
9. Intellectual individuals in a society who support change is the Intelligentsia.

C. FIND THE ANSWER TO THE FOLLOWING

1. Why did Lenin start the Revolution?
2. What is the role of the Intelligentsia?
3. How did most people in Russia live?
4. Why did communism fail in Russia?

D. READING SELECTION

People lived in poverty, while a small number of people lived in great wealth. Many farmers moved to the cities to find work in factories, so the towns became crowed and filthy. The conditions in Russia before 1917 were brutal for both workers and peasants. The workers and the peasants did not own private property so they were exploited by the Czar and the rich.

The Czar did not believe in education or benefits for his people. He was their father and absolute ruler. In 1905, many of the workers and peasants were starving, so they went to the Czar's palace to peacefully ask for help. The army opened fire upon them this became known as Bloody Sunday. This act angered many Russians, one particularly called V. I. Lenin.

Lenin was a lawyer. He was part of the Intelligentsia or intellectual people who began to read Marx and accept his view of history. They began to tell the workers about their poor conditions and started to fill their material environment with revolutionary pamphlets. The Intelligentsia believed that this would allow thoughts of revolution to form in the workers' mind.

Many Russians were killed during World War I, and support for the Czar decreased. In February 1917, the Czar left his office and a new weak government came to

power. Communism started to sound very nice to the Russian people. Those who followed Lenin were called Bolsheviks and fought against the Czar's army. Many Bolsheviks were soldiers who left the Czar's army and fought against him. Lenin promised the people Land, Bread, and Peace.

On October 25, 1917, Lenin overthrew the new government. Germany helped Lenin overthrow the new government because they wanted Russia out of WWI. The Bolsheviks took over all of the private property of the Czar and the rich. They forcefully shared it with the everyone. Russia should have become a dictatorship of the proletariat which means that workers live in peace and that the government would wither away. In reality, Marxism did not work.

Lenin forced communism in Russia. Lenin created his own philosophy called Leninism. He stated that the government would not wither away and a small group of people must control the masses. He called it the dictatorship in behalf of the proletariat. Lenin used Marx's principles to meet Russia's needs, such as feeding the people.

Marx stated that only an industrialized nation such as England or Germany can move to communism. Russia did not have capitalism, they still had peasants. Russia also did not have a middle class. Communism sounds good, but in Russia, the conflict between the bourgeoisie and the proletariat did not exist which is necessary for communism.

The dictatorship in behalf of the proletariat became an excuse for a brutal dictatorship. Joseph Stalin helped Lenin overthrow the Czar, and Leon Trotsky was in charge of the Red Army. He defeated the Czar's army in 1921. However, after Lenin died in 1924, and Stalin chased out Trotsky. Stalin became a brutal dictator until 1953.

E. HIGH-ORDER THINKING AND DISCUSSION

1. Do you think the Czar was fair? Why or Why not?
2. Do you agree with Lenin? Why or Why not?
3. Create your own journal describing the events at Bloody Sunday?
4. Do you believe that governments would go away and everyone could live in harmony? Why or Why not?
5. Would you support a communist revolution? Why or Why not?

Information to know about the USSR

A. WORDS TO KNOW AND DISCUSS

Quota Economy Collective farming 5-year plan Central planning
Nuclear power Cold War Castro Union of Soviet Socialists Republics (USSR)
Soviet Bureaucracy

B. NEW WORDS USED IN A SENTENCE

1. A quota is the amount of goods that must be produced.
2. Economy is the money interaction of a country.
3. Everyone working on a government owned farm is collective farming.
4. Every five years the Russians created a new quota.
5. Government control of everything is called central planning.
6. The capability of using nuclear weapons makes that country a nuclear power.
7. The political war of words between the United States and the USSR was the Cold War.
8. Castro is the current dictator of Cuba.
9. Soviet means council of workers in Russian.
10. Lenin changed the name Russia to USSR.
11. Regulated government by official departments is called a bureaucracy.

C. FIND THE ANSWER TO THE FOLLOWING

1. What is collective farming?
2. How does the quota system work?
3. Why did the USSR lose the Cold War?

D. READING SELECTION

The Union of Soviet Socialist Republics (USSR) was created after the Revolution. Lenin organized everyone into council of workers or soviets. These soviets were responsible for making Russia a communist society. They took away the property of the rich and gave it to the workers. After Lenin died, Stalin came to power and he forced the Russian people to work together.

The new communist government took over small farms and created one large farm or a collective farm for everyone to work on. This practice did not work because many farmers were upset for losing their land. If the farmers refused to work, Stalin used brutal methods. The tools and machines were old to farm the land, which caused crops to spoil. Also, the Russians did not have proper transportation, so many Russians starved because food was not delivered to the workers.

The economy of the USSR was based on central planning. This means that the government controlled every aspect of life. Businesses were told what to produce by the government. As a result, Russians received few choices in what to buy and long lines became a daily sight. In the United States, people are given many choices in what to buy. The mall is an example.

Central planning uses quotas to measure production. The quota system was used to determine how many products a factory needed to produce. Every five years quotas would change based on if the factory met the last quota. The Russians did not have the necessary raw materials to create goods, so they used short cuts.

For example, if a factory's quota was to make 5,000 pairs of shoes by the end of the year, without the proper material it would start to produce things that resembled a shoe. Many shoes did not have soles, shoe laces, or tongues. These things were counted to meet the factory's quota. Russian factories made very poor consumer products, such as cars, clothes, and shoes.

The Russian economy quickly developed an industry system to compete with the United States. The USSR and the U.S. were both involved in a Cold War or a political war of words. Many countries became involved in the Cold War, either favoring the U.S. or the USSR. Africa, South America, and Asia became the battleground for the Cold War.

Fidel Castro was the new leader of Cuba in 1959. He overthrew the U.S. sponsored dictator during the Cuban Revolution. Castro found help from the USSR to develop its economy and military. In 1963, the U.S. found nuclear missiles from the USSR in Cuba. This outraged the Americans and the Cuban Missile Crisis began. For 13 days the world wondered if the U. S. and the USSR would start a nuclear war. Each country was a nuclear power and could have destroyed the world. The missile crisis ended through compromise and Castro remained in power.

In the book Fail Safe (Burdick & Wheeler, 1966), United States bombers went astray and bombed the USSR capital Moscow. In order to prevent nuclear war, the United States bombed their own city of New York. The president's decision was based on the fact that everyone would loose in a nuclear war. The world would be destroyed as humans currently know it.

The world is a product of philosophy. The United States is a product of Greek democracy and the USSR is a product of Communism. Both of these philosophies shaped the world. The USSR lost the Cold War because their 5-year plan and their quota system produced inferior goods. In the USSR, a bureaucracy existed which also caused its economy to be ineffective. In a bureaucracy, a job one person could do was perfomed by three people.

Examples of bureaucracy in the United States are the post office, motor vehicles department, and the court house. Long lines develop, but these employees do not have incentives to work harder They receive pay regardless of how many people are served.

E. HIGH-ORDER THINKING AND DISCUSSION

1. Compare and contrast the United States and the USSR.
2. Evaluate central planning.
3. If you were a factory manager, then create your plan to meet the demands of the quota.
4. Do you believe that a communist revolution could occur in the United States? Why or Why not?
5. Create a journal describing the living conditions after you survived a nuclear war.

Appendix F

Teacher Critical-Thinking Pretest and Posttest

Teacher Critical-Thinking Test

Name _____

Years of teaching experience _____

Subject_____

Directions: Provide the best answer to indicate your reaction to these questions and statements concerning critical thinking. Please answer in short responses of 2-4 sentences.

1) Identify all your prior knowledge concerning critical thinking.

2) Why does questioning benefit students?

3) Describe the usefulness of Bloom's Taxonomy.

4) Rate your knowledge of each level of Bloom's Taxonomy.

5) Do you believe that philosophy can help improve critical thinking skills?

6) Why does prior knowledge increase critical thinking skills?

7) Do you agree that direct instruction can impact learning in the classroom?

8) Identify graphic organizers.

9) Do you think discussion and cooperative learning are necessary for teaching critical thinking?

10) Why do you think vocabulary is an important aspect of the learning process?

Possible score: 100
Total teacher score:

Appendix G

Teacher Presurvey and Postsurvey

The survey is designed to identify teacher attitudes and practices regarding higher level thinking activities. Please specify the extent to which you agree or disagree with the following statements concerning the instructional knowledge of critical thinking and Bloom's Taxonomy by classroom teachers. Circle the most suitable number using the scale below.

1 = Strongly Disagree (SD) 2 = Disagree (DA) 3 = Neutral (N) 4 = Agree (A)
5 = Strongly Agree (SA)

Score:_____	SD	D	N	A	SA
1) More low-level activities are needed than higher-level activities.	1	2	3	4	5
2) Students should be engaged in in more critical thinking activities than preparing for state-mandates tests.	1	2	3	4	5
3)Critical thinking activities are essential to core curriculum.	1	2	3	4	5
4) Time schedules hinder most teachers from teaching critical thinking activities.	1	2	3	4	5
5) My knowledge base concerning the nature of critical thinking can improve.	1	2	3	4	5
6) Teachers provide low-level activities 75% of class time.	1	2	3	4	5
7) I engage students in low-level activities 75% of class time.	1	2	3	4	5
8) Bloom's Taxonomy is needed to increase student critical thinking opportunities.	1	2	3	4	5
9) Bloom's Taxonomy is effective to elicit student prior knowledge.	1	2	3	4	5
10) I ask higher-level questions 75% of class time.	1	2	3	4	5

	SD	D	N	A	SA
11) Students need the ability to identify the action verbs of Bloom's Taxonomy.	1	2	3	4	5
12) Students should be allowed to create their own questions defined through Bloom's Taxonomy.	1	2	3	4	5
13) My knowledge base of Bloom's Taxonomy is inadequate.	1	2	3	4	5
14) I have an adequate knowledge base of philosophical concepts.	1	2	3	4	5
15) Philosophy taught in the classroom can increase student opportunities to engage in critical thinking.	1	2	3	4	5
16)Teachers rely solely on textbooks for critical thinking development.	1	2	3	4	5
17) Textbooks provide enough material for critical thinking development.	1	2	3	4	5
18) Direct instruction is needed to teach critical thinking vocabulary.	1	2	3	4	5
19) I use graphic organizers to teach content-area knowledge 80% of the time.	1	2	3	4	5
20) I incorporate real-life discussions to support critical thinking activities.	1	2	3	4	5

Appendix H

Student Critical-Thinking Pretest and Posttest

Critical-Thinking Test

Directions: Read the words in Column A and their definitions in Column B. Then identify the word with its definition.

Column A	Column B	
		1._____
1) Evaluate	a. To create a plan	2._____
2) Criticize	b. Able to show how things are alike	3._____
3) Justify	c. To give reasons for	4._____
4) Analyze	d. To defend your reason	5._____
5) Apply	e. To be able to show how things are	
6) Compare	different	6._____
7) Contrast	f. To be able to say if things are good	
	or bad	7._____
	g. To draw a conclusion	8._____
8) Design	h. To examine the parts of a topic	9._____
9) Support	i. To give the negative aspects	10._____
10) Infer	j. To use	

Fill in if the statement or question is low-level or high-level and explain why.

1) Compare and contrast the Romans and the Greeks._____
2) Can you solve the problem? _____
3) Who is Plato? _____
4) Describe ancient Greece? _____
5) Do you agree with Plato? Why? _____
6) Which philosopher did you like? Why? _____
7) Explain Idealism. _____
8) What is the use of philosophy?_____
9) Do you think that punishment is necessary? Why? _____
10) Define philosophy. _____

Possible Points: 50
Total Score:

Appendix I

Student Presurvey and Postsurvey

The survey is designed to identify student knowledge regarding higher-level thinking vocabulary. Please specify the extent to which you agree or disagree with the following statements concerning the knowledge of critical thinking skills in the classroom. Circle the most suitable number using the scale below.

1 = Strongly Disagree (SD) 2 = Disagree (DA) 3 = Neutral (N) 4 = Agree (A)
5 = Strongly Agree (SA)

Score:_____	SD	D	N	A	SA
1) Previous learning allowed me to think critically about real-life problems.	1	2	3	4	5
2) I am able to identify critical thinking vocabulary (such as the word evaluate).	1	2	3	4	5
3) I can demonstrate higher-level thinking with little trouble.	1	2	3	4	5
4) I am able to compare and contrast different kinds of information.	1	2	3	4	5
5) I am able to support my answers from the information in the text.	1	2	3	4	5
6) I can distinguish between fact and opinion.	1	2	3	4	5
7) I am able to identify different views about the same issue.	1	2	3	4	5
8) I know Bloom's Taxonomy action verbs.	1	2	3	4	5
9) I can create higher-level questions using Bloom's Taxonomy action verbs.	1	2	3	4	5
10) I know that philosophy is critical thinking.	1	2	3	4	5
11) I can develop criteria to explain my beliefs.	1	2	3	4	5
12) I can master 75% of the objectives in the content-area of history.	1	2	3	4	5

Appendix J

Preobservation and Postobservation Instrument

Observation Instrument

Time Observation Begins_____

Subject Area Observed_____

Time Observation Ends_____

Type of Classroom_____

Number of Students_____

Classroom Behaviors of Teacher	Frequency
1a) Uses higher-level questions	1a)_____
1b) Uses knowledge-level questions	1b)_____
2a) Engages in student-generated questions	2a)_____
2b) Engages in teacher-generated questions	2b)_____
3a) Defines higher-level vocabulary of Bloom's Taxonomy	3a)_____
3b) Defines only knowledge-level vocabulary of Bloom's Taxonomy	3b)_____
4a) Refers to self-designed material for question development	4a)_____
4b) Refers to the text for question development	4b)_____
5a) Applies basic vocabulary to higher-level activities	5a)_____
5b) Applies basic vocabulary to knowledge-level activities	5b)_____
6a) Provides higher-level activities	6a)_____
6b) Provides knowledge-level activities	6b)_____

General description of the classroom:

Total frequency A_____
Total frequency B_____

Appendix K

Bloom's Taxonomy of Cognitive Skills
Action Verb Direct-Instruction Sheet

Bloom's Taxonomy of Cognitive Skills Sheet

Low Level

Knowledge-to know

Know
Tell
Label
Name
List
Define

Comprehension-to reexplain

Discuss
Describe
Explain
Identify
Review
Locate

Application-to use

Demonstrate
Show
Illustrate
Solve
Apply
Exhibit
Employ
Interview
Use

Directions:
1)Define the main word such as Knowledge and create a meaningful paragraph using 5 high-level words.
2) Develop 8 general questions using high-level verbs.
3)Answer the following questions/statement based on the definition of the word.
1) Why is it necessary to evaluate the opinions of people? 2) Compare and contrast two types of music.

High Level

Analysis-to take apart

Analyze
Interpret
Examine
Diagram
Compare and Contrast
Differentiate
Detect

Synthesis-to design your own and why

Plan
Develop
Hypothesize
Generalize
Formulate
Imagine
Produce
Prepare
Create

Evaluation-give reason good or bad and why

Justify
Appraise
Value
Choose
Determine
Decide
Conclude
Predict
Recommend
Measure
Criticize
Evaluate
Rate
Why

Possible score: 50
Total score:

Appendix L

Rubrics

Rubric for Direct Instruction Sheet Responses

Name:_____ Topic of sheet: Scientific theories
Greek philosophy
Logic
Ethics
Marxism

Outstanding = 5 Excellent = 4 Good = 3 Fair = 2 Unsatisfactory = 1

Criteria for Rating Performance Student Performance

1. Use of Evidence:----------

2. Organization of ideas and concepts:----------

3. Gave reason(s) for answer(s):----------

4. Quality of facts:----------

5. Use of high-order vocabulary:----------

6. Creativity:----------

7. Applied low-level knowledge to high-level knowledge:----------

Overall comments:

_____
_____
_____
_____

Possible score: 35
Total score:
Coverted score out of 50:

Rubric for Philosophical Discussion

Name:_____ Topic of Discussion: Scientific theories
Greek philosophy
Logic
Ethics
Marxism

Outstanding = 5 Excellent = 4 Good = 3 Fair = 2 Unsatisfactory = 1

Criteria for Rating Performance Student
Performance

1. Student asks questions about what others talked about:----------

2. Student talk express the class discussion:----------

3. Student asks general questions:----------

4. Student's response reflects thinking beyond the text:----------

5. Student can provide evidence for his/her answer:----------

6. Student response reflects critical thinking vocabulary:----------

7. Student response implies listening to peers:----------

Overall Comments:

_____
_____
_____
_____

Possible score: 35
Total score:
Coverted score out of 50:

Appendix M

Content-Area Posttests

Stone Age Test

1) Define the following.
Stone Age
Archeology
Theory
Hypothesis
Inductive reasoning
Deductive reasoning
Evidence
Inference

Directions: Answer in a short response of 2-4 sentences.

2) Cave paintings provide archaeologists with evidence. Why?

3) Create your own theory to explain how humans settled in North America.

4) Evidence is important in inductive reasoning. Why or Why not?

5) Compare and contrast inductive and deductive reasoning.

6) If you wanted to show that X (X = anything) existed, then what evidence is needed to support X's existence.

7) Create a one sentence hypothesis regarding the Stone Age.

8) If a piece of paper was very white, had expensive markings, and of high quality, then what can you infer or tell about the owner of the paper.

Possible score: 50
Total score:

Greek Philosophy Test

1) Create meaningful sentences for the following.

Idealism, Empiricism, Plato, Metaphysics, Logic, Syllogism, Utilitarianism

Answer the following statements in 2-4 sentences.

2) Which philosophy do you like best: idealism or empiricism. Why?

3) Tell which is inductive or deductive reasoning and why.

a) The murderer had worn red shoes, Joe has red shoes, Joe could be the murderer.

b) Z=F, F=2, 2=? Create two more valid problem statements.

c) All people with computers are smart

Sue. . .
Therefore, Sue is smart
Fill in the missing part. Create two more logic statements.

4) Joe was sent to jail; even though he did not commit the crime. Is this fair? Why or Why not?

5) Evaluate Utilitarianism. Are there any problems? Why?

6) Use the utilitarianism approach to determine how you would act when:
lying to your friend, doing your homework, and stealing a piece of bread from the table.

7) Can a valid statement be false? Why or Why not?

8) Define the following terms: the beautiful, the good, and
fairness

Possible score: 50
Total score:

Russian Revolution Test

1) Use the following to supply the answers.

Intelligentsia, Proletariat, Lenin, Quota, Conflict, Stalin, Revolution, Castro, Marx, Exploitation, Labor, Materialism, Dialectic,Central Planning, USSR

a- The _____ are the workers.
b- _____ took over Russia in 1917.
c- The amount of goods produced in a given time is a(n)_____.
d-The _____ of the workers should cause them to revolt.
e- _____ between the bourgosie and the workers will cause revolution.
f- The most brutal dictator of Russia was _____.
g-The _____of the worker produced the chair.
h- _____ is a change from one form of government to another.
i-_____ is the current leader of Cuba.
j- The _____ are the intellectuals of a country.
k- _____ is the concept that reality is only made of concrete things.
l- _____ is when the government owns everything.
m- The founder and philosopher of communism was _____.
n- _____ states that everything contains its opposite.
o- The _____was known as Russia.

Directions: Write answers in 2-4 sentences to best response to the following.

2) Do you believe that the quota system was effective? Why or Why not?

3) If you are a worker, then describe your living conditions.

4) History is a class struggle. Why or Why not?

5) Predict the effect the quota system would have on the environment.
a-no effect b-high tree volume c-high pollution d-moderate pollution

6) Imagine you worked on a collective farm. Would you produce more or less goods if you did not own the land. Why?

7) Does conflict produce change? Why or Why not?

Possible score: 50
Total score:

Appendix N

Student Journal Responses

Student Journal Responses

Directions: Answer the questions based on your experience and explain why.

1) Did you find philosophy helpful?

2) Did you know any of the concepts before you learned philosophy?

3) Did the organization of low-level to high-level knowledge help you learn?

4) Were the think sheets helpful to learn the new material?

5) Did your critical thinking skills improve?

6) Do you think knowing Bloom's Taxonomy vocabulary words help you identify what critical thinking is?

7) Are you able to identify how philosophy applies to real-world experiences?

8) Can philosophy be applied in other classes?

9) How did you find the program?

10) What were both positive and negative aspects about philosophy?

11) Did philosophy engage you in complex problems?

12) Were discussions helpful?

13) Did learning the vocabulary help you learn complex concepts?

14) Was the textbook helpful?

15) Did studing philosophy help you think about thinking?

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